
The United Republic of Tanzania

# Tanzania Agriculture Master Plan 2050

## Roadmap to Transform the Crops Livestock and Fisheries Sectors

**August, 2024**

# Foreword

As we stand at the cusp of a new era in the agricultural sector, it is imperative that we have a clear roadmap to guide us towards sustainable and inclusive growth in this vital sector. The Agricultural Master Plan outlined in this document is the culmination of extensive research, consultation, and collaboration with stakeholders from across the industry.

The Agricultural Master Plan is a key pillar that will provide a clear path towards Tanzania becoming a higher middle-income country by 2050. This ambition will be fueled by expansion of land under irrigation, improved inputs use, mechanization of farm activities, improved access to extension services, and reduction of post-harvest losses. Furthermore, it will improve access to local and international market, enhance research and development, promote adoption of innovation and technology and implementation of policy and regulatory reforms to facilitate trade and value addition, as well as increase youth and women employment in agriculture.

Through this Agricultural Master Plan, we aim to harness the potential of our agricultural sector to drive economic growth, create employment opportunities, and improve the livelihoods of millions of farmers. It is a blueprint for transforming the food systems to be more sustainable, resilient, equitable and have the capability to meet the needs of a growing population while protecting our natural resources.

This Agricultural Master Plan emerges as a beacon, guiding us toward a sustainable and prosperous future where tradition and innovation converge. This visionary blueprint, driven by a collective commitment to excellence and inclusivity, places the private sector, youth and women at the forefront of agricultural innovation and development, building upon the rich heritage of our nation's existing agriculture plans.

Crops, livestock, and fisheries are beacons that represent our heritage, diversity, and ingenuity. As we navigate the complexities of the 21st century, from climate change and resource scarcity to evolving consumer demands and technological advancements, the leadership and expertise of the private sector serve as catalysts for change and progress.

The Agricultural Master Plan 2050 is a testament to the power of collaboration, partnership, and shared vision. At its heart are ambitious flagship initiatives that leverage the strengths of the various stakeholders and build on the foundations of our existing agriculture plans.

From promoting sustainable agricultural practices and enhancing value chains to fostering innovation hubs and digital agriculture platforms, these flagships embody our commitment to unlocking the full potential of agriculture. This, in turn, will drive economic growth, enhance food security, and promote environmental stewardship.

As we embark on this transformative journey, we would like to express our gratitude to all experts, policymakers, farmers, development partners and stakeholders who have contributed their expertise and insights to the development of this ambitious Master Plan. We are confident that with their continued support and commitment, we will realize the full potential of the sector and build a prosperous future towards a more resilient, inclusive, and sustainable agricultural sector

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Minister of Agriculture

**Hon. Abdallah Hamis Ulega (MP)**

Minister of Livestock and Fisheries

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## List of Abbreviations

| | | | |
|---|---|---|---|
| 3ADI | African Agriculture and Agro-Industries Development Initiative | FSDT | Financial Sector Deepening Trust |
| ACP | Agricultural Commercial Programme | FSMP | Fisheries Sector Master Plan |
| AEZ | Agro-ecological zones | FTE | Full-time equivalent |
| AFI | Agricultural Finance Initiative | FYDP | Five Year Development Plan |
| AFSS | Agricultural Financial Support Service | GAP | Good Agricultural Practices |
| AGCS | Agricultural Credit Scheme | GATT | General Agreement on Tariffs and Trade |
| AgGDP | Agricultural GDP | GDP | Gross Domestic Product |
| AGRIPOL | Agricultural Policy | GIS | Geographic Information System |
| AGTIF | Agricultural Input Trust Fund | Ha | Hectares |
| AI | Artificial insemination | ICT | Information and Communications Technology |
| AIDA | Agricultural Investment Data Analysis | IEA | International Energy Agency |
| AJSR | Agriculture Joint Sector Review | IFAD | International Fund for Agricultural Development |
| AMP | Agriculture Master Plan | IFRPI | International Food Policy Research Institute |
| ASA | Agricultural Seed Agency | IVS | Input Voucher System |
| ASDP | Agricultural Sector Development Programme | KPI | Key Performance Indicator |
| ASDS | Agricultural Sector Development Strategy | KT | Kilo tons |
| ATMIS | Agriculture Trade Management Information Systems | LGA | Local Government authority |
| ATO | Agriculture Transformation Office | LIMS | Land Information Management System |
| AVDP | Agricultural Product Development programme | LMP | Livestock Master Plan |
| BAU | Business-as-usual | LMU | Livestock Multiplication Unit |
| BBT-LIFE | Building Better Tomorrow for Livestock and Fisheries Entrepreneurs | LSP | Local service provider |
| BBT-YIA | Building Better Tomorrow Youth Initiative for Agribusiness | LTPP | Long Term Perspective Plan |
| BoT | Bank of Tanzania | MCC | Milk Collection Centre |
| CAADP | Comprehensive Africa Agriculture Development Programme | MCS | Monitoring, Control, and Surveillance |
| CBPP | Contagious Bovine Pleuropneumonia | Mha | Million hectares |
| CCARDESA | Centre for Coordination of Agricultural Research and Development for Southern Africa | MoA | Ministry of Agriculture |
| CCPP | Contagious Caprine Pleuropneumonia | MoLF | Ministry of Livestock and Fisheries |
| CPP | Crop protection products | MP | Master Plan |
| CRDB | Cooperative Rural Development Bank | MPRU | Marine Parks and Reserves Unit |
| DAC | Development Assistance Committee | MSME | Micro, Small and Medium Enterprises |
| EAC | East African Community | MT | Metric tonnes |
| EEZ | Exclusive Economic Zone | MTSP | Medium Term Strategic Plan |
| FADC | Food and Agriculture Delivery Council | NAIC | National Artificial Insemination Centre |
| FAO | Food and Agriculture Organisation | NARCO | National Ranching Company Limited |
| FCR | Feed conversion ratio | NDC | Nationally Determined Contributions |
| FDI | Foreign Direct Investment | NGO | Non-Governmental organisation |
| FEATI | Farmer Empowerment through Agricultural Technology and Information | OECD | Organisation for Economic Co-operation and Development |
| FFYP | First Five Year Plan | OMDTZ | OpenMap Development Tanzania |

| | |
|---|---|
| OWID | Our World in Data |
| PASS | Private Agricultural Sector Support |
| PDU | President's Delivery Unit |
| PO-RALG | President's Office, Regional Administration and Local Government |
| PPP | Public-private partnership |
| PPR | Peste Des Petits Ruminants |
| PSFS | Pathways for Sustainable Food Systems |
| R&D | Research and development |
| RFCI | Rural Finance and Community Infrastructure |
| RIAPA | Rural Investment and Policy Analysis |
| RMSP | Microfinance Support programme |
| SACCOS | Savings and Credit Cooperative Societies |
| SAGCOT | Southern Agricultural Growth Corridor of Tanzania |
| SCGS | Smallholders Credit Guarantee Scheme |
| SEMA | Smallholder Entrepreneurship and Market Development |
| SHF | Smallholder farmer |
| SIDO | Small Industry Development Organisation |
| SME | Small and medium-sized enterprise |
| SSA | Sub-Saharan Africa |
| TADB | Tanzania Agricultural Development Bank |
| TAFICO | Tanzania Fisheries Company |
| TAFIRI | Tanzania Fisheries Research Institute |
| TAFSIP | Tanzania Agriculture and Food Security Investment Plan |
| TAHA | Tanzania Horticultural Association |
| TAIDF | Tanzania Agro-industries Development Flagship |
| TALIRI | Tanzania Livestock Research Institute |
| TANU | Tanganyika African National Union |
| TARI | Tanzania Agriculture Research Institute |
| TARIC | TAHA Research and Information Resource Centre |
| TCCIA | Tanzania Chamber of Commerce, Industry and Agriculture |
| TCDC | Tanzania Cooperative Development Commission |
| TDV | Tanzania Development Vision |
| TLRI | Tanzania Livestock Research Institute |
| TMX | Tanzania Mercantile Exchange |
| TZ | Tanzania |
| TZS | Tanzanian Shilling |
| USAID | US Agency for International Development |
| VAT | Value-added tax |
| VLUP | Village Land Use Plan |
| WTO | World Trade Organisation |
| ZPDB | Zanzibar's Presidential Delivery Bureau |

# 1 Executive summary

# 1. Executive summary

*This document sets out a guiding roadmap for food systems transformation in Tanzania. It builds on learnings from previous sectoral plans and the Agricultural Sector Development Programme II Mid-Term Review (ASDPII MTR). It lays out a 2050 vision for the food system and a shorter-term plan until 2030.*

**Tanzania is aiming to reach upper middle-income status by 2050, in line with its Vision 2050.** Achieving this ambitious vision requires a fourfold increase in gross national income (GNI) per capita by 2050, or in other words, an average of 8% annual growth across the entire economy for 25 years. Such growth rates are ambitious but not unprecedented. Other countries have achieved whole-economy transformations in the past. This prosperity depends, however, on significant improvements in food systems and in the productive agricultural sector in particular – that is to say, crops, livestock and fisheries. For not only is the agricultural sector one of the largest contributors to GDP (28%) and largest employer (65%) in Tanzania (in 2022), it is also a critical enabler for the rest of the economy. Agricultural transformation, impacting entire food systems, is a critical driver of inclusive economic growth. It leads to overall increases in GDP, reduces poverty, safeguards sustainable and resilient food systems, and frees up workforce from the agricultural sector.

**A detailed diagnostic reveals that even though progress has been made in recent years, the agricultural sector is still at a very early stage in its transformation**. This is true in terms of key commodity productivity (e.g., for maize, wheat, paddy, and banana it is ~3x lower than Tanzania's best performing peers in East Africa) and it is true in terms of limited added value (i.e., less than 5% of fruits and vegetables, red meat and dairy are processed). This is limiting the growth of the sector. Among other, these inefficiencies are due to low usage of quality inputs, restricted market access, limited processing capabilities, inadequate mechanisation, constrained access to financial resources, infrastructural deficiencies, and limited commercialisation. Nevertheless, the country has significant potential. Tanzania is well placed to play a key role in global and regional trade. It has land available for growing crops and raising livestock and fish. Additionally, its land and waters are well suited for reaching best-in-class productivity for priority commodities.

**An ambitious 2050 vision for the food system has been developed via an iterative and consultative approach rooted in the diagnostic and lessons learned from previous transformations.** Challenges and opportunities were identified using this detailed diagnostic as well as reviewing prior and current strategies applied in Tanzania (e.g., MTR of ASDP II), cases of international agricultural transformations, and key trends impacting the sector (notably climate change and nutrition). These challenges and opportunities were used as input to develop the vision, along with national priorities, input from stakeholders across the public, private and social sector, and a robust macro-economic model. The resulting agriculture vision for 2050 outlined in this document is one that is both ambitious and achievable and which can lead to a holistic transformation of the food systems, establishing agriculture as a key pillar of Tanzania's overall development. This AMP vision, which also touches on the food system, can serve as a key input to a broader Vision 2050 for Tanzania:

*By 2050, Tanzania's agricultural sector will be a driving force of economic prosperity with **agricultural GDP quintupling to $100 billion (~280 trillion TZS),** as a result of decades of unprecedented growth. At the heart of this vision is a commitment to at least **triple productivity of key commodities in a resilient and sustainable way** ensuring that **every Tanzanian enjoys security of nutritious high-quality food**, making hunger a thing of the past. This leap forward will fuel rural development **as increased productivity and access to markets will double smallholder income** and eradicate extreme poverty. Simultaneously, a surge in agribusiness will **increase large-scale production and increase food processing fivefold,** creating millions of well-paid jobs, all the while placing women and young people at the heart of this transformation. This growth in production and processing will steer the country towards becoming a breadbasket of the region and a powerhouse in the global export market, making **over US$20 (~55 trillion TZS) billion in agriculture exports.***

**It is clear from the outcomes above mentioned, that the agricultural sector will be a driving force to reach upper-middle income status by 2050.** These outcomes, and the critical role of the sector on the broader economy has been modelled using a robust dynamic economywide model called Rural Investment and Policy Analysis (RIAPA). The model tracks how various interventions will impact the agrifood system and how these changes affect household and individual level outcomes, such as incomes, poverty, and undernourishment. The model also enables to show the impact of implementing the AMP compared to a "business-as-usual".

**To complement this 2050 vision, a mid-term ambition has been set for 2030 to achieve the first stage of the agriculture transformation**:

- Reach 10% annual growth rates in the agricultural sector by 2030
- Enhance productivity of key commodities by >50% in a sustainable and resilient way
- Increase smallholder income by >25% (to approximately 4 million TZS)
- Promote the development of medium and large-scale commercial entities across the value chain and increase agri-processing to US$3 billion (~8 trillion TZS)
- Reach US$6 billion (~16 trillion TZS) in net exports

# Vision 2050

By 2050, Tanzania's agriculture sector will be a driving force of economic prosperity with **Ag GDP quintupling to $100 billion,** as a result of decades of unprecedented growth

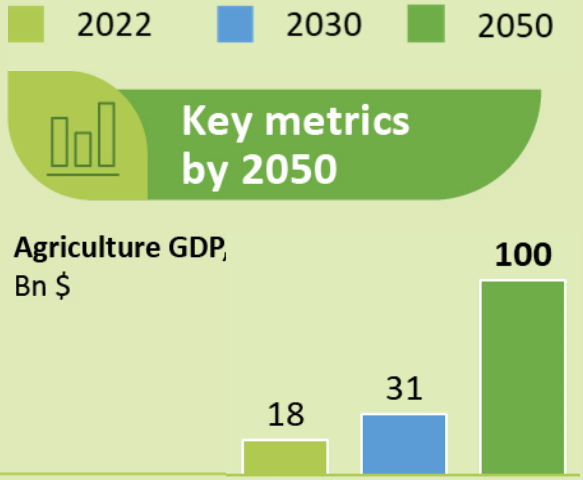
At the heart of this vision is a commitment to at least **triple productivity of key commodities in a resilient and sustainable way** which will ensure that **every Tanzanian enjoys security of nutritious high-quality food,** making hunger a relic of the past

This leap forward will fuel rural development, **as increased smallholder productivity and access to markets will double their income** and eradicate extreme poverty

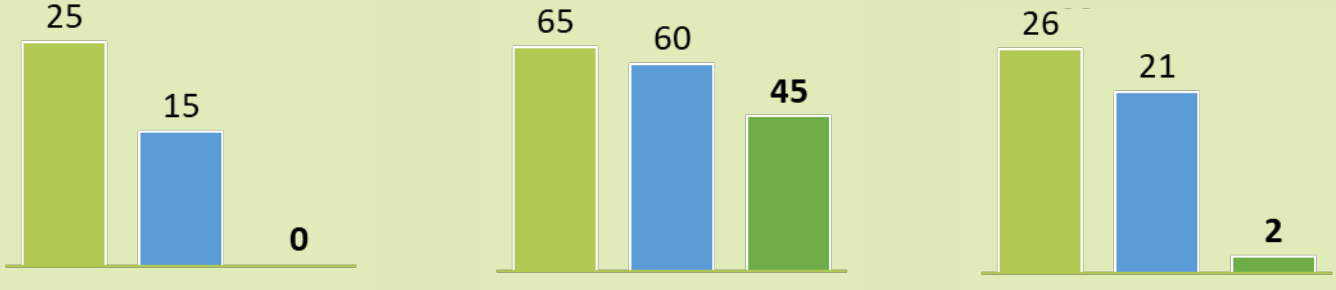
Simultaneously, a surge in agribusiness will **increase large-scale production and increase food processing fivefold,** creating millions of well-paid jobs, all the while placing women and youth at the core of this transformation

This growth in production and processing will steer the country towards becoming a breadbasket of the region and a powerhouse on the global export market, with **over $20 billion in agriculture exports**

# Key metrics by 2050



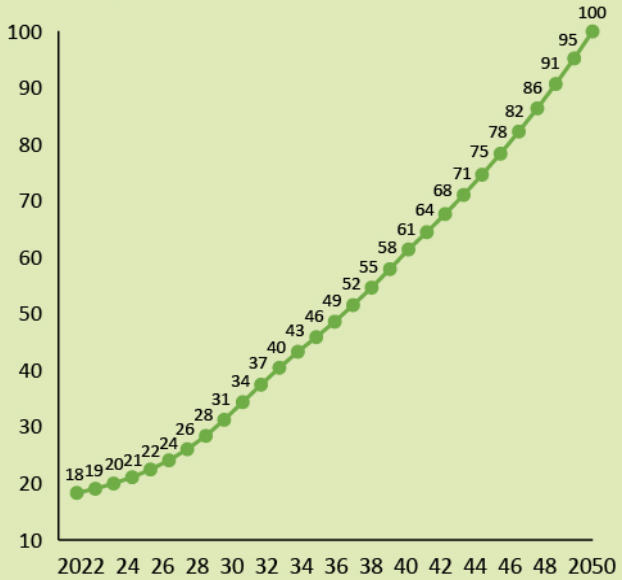

# Broader outcomes of the transformation by 2050



# Successful implementation of the AMP will transform the sector by 2050

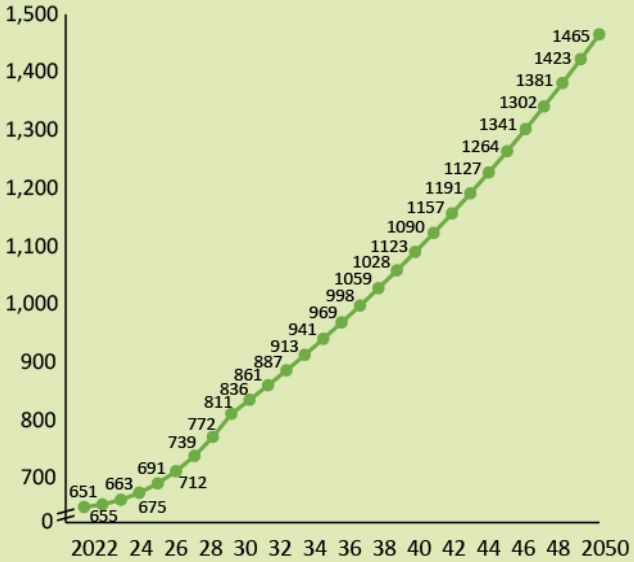
Agricultural Master Plan

**Agricultural GDP**
Year-on-year values ($ billions – constant 2022 prices)



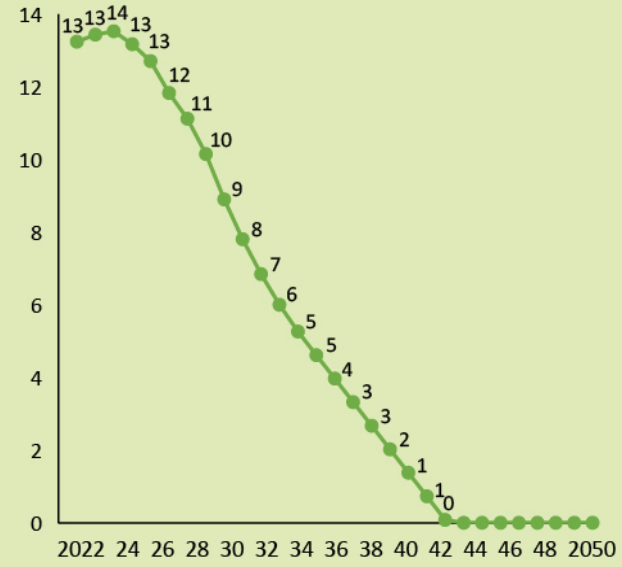

The graph shows the growth of Agriculture GDP between 2022 and 2050 on a yearly basis in billion of USD as a result of the implementation of the Agriculture Master Plan. Ag GDP is expected to grow from 18Bn$ in 2022 to 100Bn$ in 2050 which is a 550% increase.

**Per capita farm household incomes**
Year-on-year values ($ in constant 2022 prices)



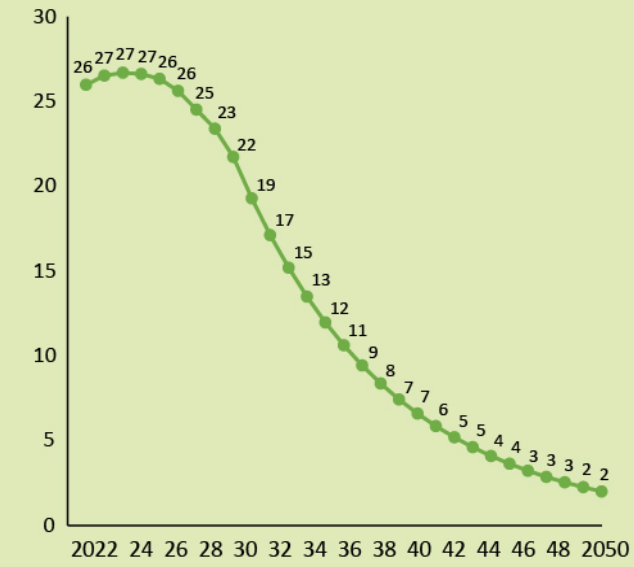

The graph shows the increase in farm household income between 2022 and 2050 on a yearly basis in $ as a result of the implementation of the AMP. Per capita farm income is expected to grow from 651$ in 2022 to 1,465$ in 2050, which is a 220% increase.

**People suffering from undernourishment**
Year-on-year values (# people in million)




The graph shows the reduction of people suffering from undernourishment between 2022 and 2050 on a yearly basis in million of people as a result of the implementation of the AMP. Undernourishment is expected to be eradicated in Tanzania by 2042.

**Population living in poverty**
Year-on-year values (millions of people)

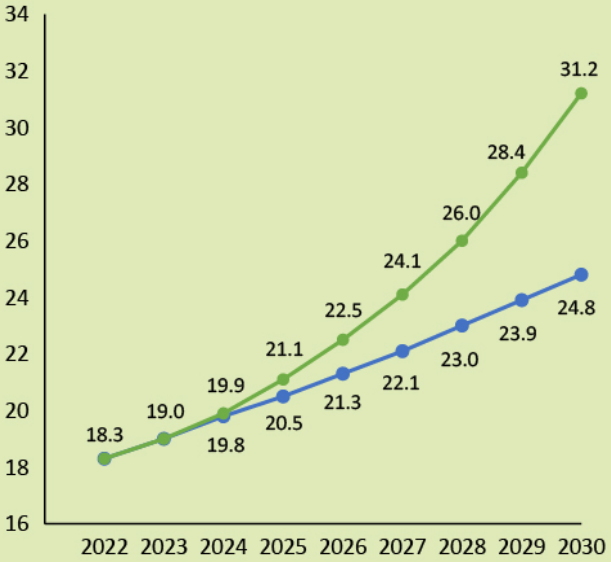



The graph shows the reduction of people living in poverty between 2022 and 2050 on a yearly basis in million of people as a result of the implementation of the AMP. People living in poverty is expected to decrease from 26 million in 2022 to 2 million in 2050, which is a 92% decrease.

# Successful implementation of the AMP will lead to benefits across society by 2030

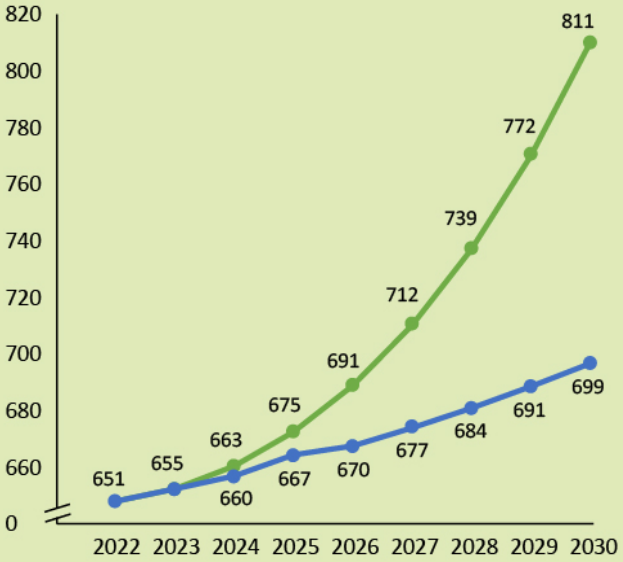
Business-as-usual  Agricultural Master Plan

**Agricultural GDP**
Year-on-year values ($ billions – constant 2022 prices)



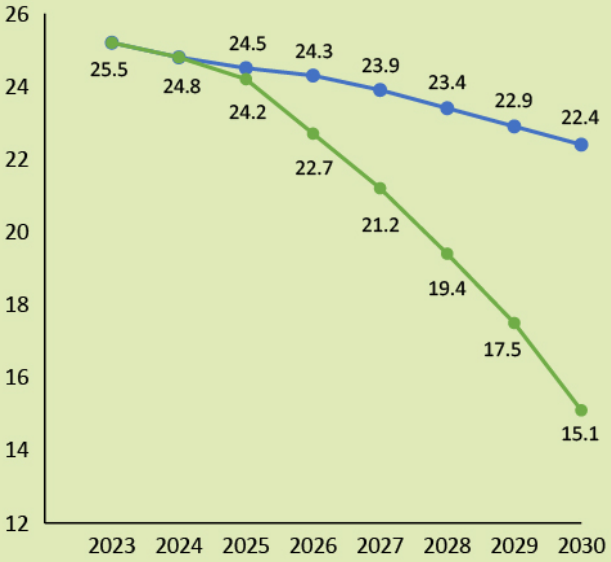

The AMP will result in an Ag GDP of 31.2 Bn$ by 2030. This is 6Bn$ higher than under a business-as-usual scenario where Ag GDP would be at 24.8 Bn$ in 2030.

**Per capita farm household incomes**
Year-on-year values ($ in constant 2022 prices)



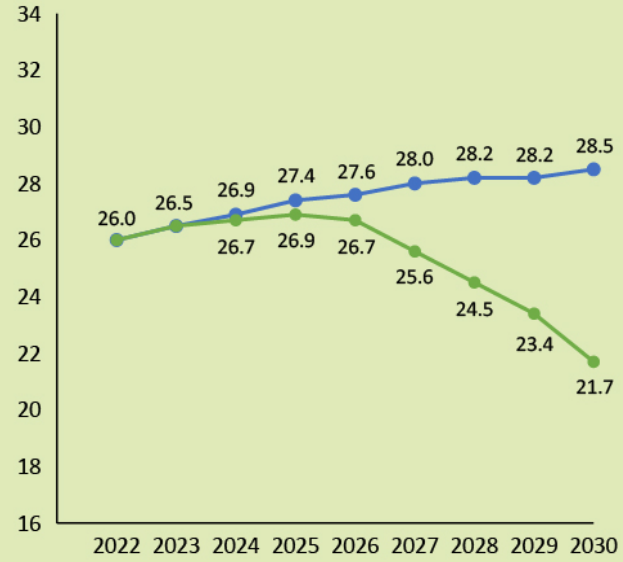

The AMP will result in a per capita farm household income of 811$ by 2030. This is 100$ higher than under a business-as-usual scenario where the income would be at 699$ in 2030.

**National prevalence of undernourishment**
Year-on-year values (%)




The AMP will result in a prevalence of undernourishment drop to 15.1% by 2030. This is 7% lower than under a business-as-usual scenario where undernourishment would be at 22.4% in 2030.

**Population living in poverty**
Year-on-year values (millions of people)




The AMP will result in the share of people living in poverty to drop to 21.7% by 2030. This is 7% lower than under a business-as-usual scenario where people living in poverty would be at 28.5% in 2030.

Population in poverty calculated using the international poverty line. Using the national poverty line would bring this number to 15Mn in 2022

**To achieve these ambitions, 15 flagships have been designed and 20 commodities prioritised.** These flagships are ambitious development projects. Each can be catalytic in achieving the priority areas of the Agriculture Master Plan, and each addresses critical bottlenecks across the value chain. Together, they can enable the growth of priority commodities while ensuring equal access to these opportunities for men, women, and youth. Each of these commodities has been selected for having high impact, supporting a market-centric approach and being consistent with a shift to higher-value commodities (including for export). Prioritisation was based on share of agricultural GDP, growth potential, contribution to nutritious diets and food security, resilience/adaptation potential, and relevance to smallholders. An overview of the priority commodities and the flagships designed around them is set out below.

**Implementing the flagships has an estimated cost for Government of US$5.5 billion (~15 trillion TZS) between 2024-2030 and will increase GDP by US$20 billion (~55 trillion TZS) of which US$13 billion (~35 trillion TZS) comprises agricultural GDP and US$7 billion (~20 trillion TZS) is spread across the wider economy.** Successfully implementing the Agriculture Master Plan (AMP) will lead to widespread benefits across society that go beyond GDP growth. Average smallholder income will increase by >25% and lead to 7 million fewer people living in poverty (using the World Bank's international poverty line). Increased incomes and higher food production will reduce the share of the population who are undernourished from 25% to 15%. Finally, workforce composition will start to change as the share of people working in agriculture drops from 65% to 60%. The overall impact of the AMP's implementation is shown on the next page, highlighting the differences from maintaining a business-as-usual scenario.

**Learning from the experience of applying previous sectoral strategies in Tanzania and from international cases of agricultural transformations, successful implementation of the AMP is founded on strong delivery mechanisms, dedicated governance, and adequate financing mechanisms.** An Agriculture Transformation Office (ATO) has been set up to drive the plan's execution and support implementation. The ATO will also play a key role in designing governance for the AMP, to coordinate the plan between Ministries and to coordinate implementation on the ground with the local government authorities. Finally, the ATO will also play a key role in supporting the translation of this plan into annual budgets. This should be done considering appropriate financing mechanisms and ensuring continuity with programmes funded under previous strategies. Ensuring the AMP is well supported and fully embedded within Government will secure the successful transformation of the sector, benefiting millions of smallholders and contributing to a more prosperous Tanzania.

# Overview flagships of the Agriculture Master Plan

2030 Ambition  X Flagship

## Enhance productivity of key commodities by >50% in a sustainable and resilient way

1. **Expand area under irrigation to 1.2Mha** and build irrigators organizations capacity with a focus on seed production and priority commodities
2. **Quintuple seed** production by boosting private production and improving efficiency of government organizations
3. **Improve soil health by developing agriculture management plans across 3Mha and by transitioning 3Mha to climate smart agriculture** though on-farm soil mapping to develop action plans and national soil degradation assessments to develop climate smart practices

## Increase smallholder income by >20%

4. **Scale upstream and downstream market linkages for 2M+ smallholders to access quality inputs, markets, and other services,** by formalizing and scaling smallholder groups across 1.7M agriculture entities (e.g., farms/ponds), and incubating farmer-facing SMEs through BBT and third-party accelerators
5. **Improve red meat & dairy farmers' access to market by promoting viable offtake volumes and high product quality,** through improved breeding programs, scaled pasture production, mass vaccination campaigns, expanded livestock traceability, and establishment of new MCCs and small ranches
6. **Develop traditional cash crops and major food crops through board-led excellence** in orchestrating various actors and resources across priority value chains to create a conducive environment for smallholders to access better markets and thrive

## Promote the development of >1000 medium and large-scale commercial entities across the value chain

7. **IImprove profitability and operational effectiveness of agriculture businesses in TZ,** via removal of agriculture-specific regulatory barriers (incl. export barriers), and by scaling (S)AGCOT from 1 to 4 corridors as an implementation mechanism for policy changes
8. **Accelerate the development of commercial activities of priority commodities** - wheat, soya beans, poultry, aquaculture and fertilizer - by unlocking prerequisites to increase investment from private sector
9. **Increase specific commodities processing by 10x** by developing warehouses and market linkages, building one agro-industrial processing cluster and building processing infrastructure for sisal, cashew nuts, poultry, fisheries, dairy and packaging

## Facilitate export to reach 6 Bn$ export

10. **Increase regional and international export to $6Bn** by enhancing cold chain, airport and seaport capacity and efficiency, including processes

## Create supportive enabling environment

11. **Digitally register 9.9 Mn farmers & stakeholders** and digitalize agriculture ecosystem to enable targeted farmer support, informed decision making, etc.
12. **Boost coverage of extension services by ~2X, and improve quality of services** through the establishment of an operational supports fund, hiring of new extension agents, scaling of digital extension services, and establishment of required refresher programs
13. **Provide access to financing to 1.7 Mn beneficiaries in groups and 30k SMEs** through adapted products, increased distribution networks and risk-sharing
14. **Sustainably unlock 1.5Mha for commercial agriculture and 1.2Mha land ownership for smallholders** including women and youth through an agricultural land database
15. **Enhance Food Security** through strengthened Early Warning Systems, Strategic Food and Feed Reserves and emergency response, as well as fish Monitoring, Control, and Surveillance

## Commodities

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Cotton | Cashew | Sisal | Fruits (focus on avocado and banana) | Coffee | Maize | Spices (focus on cloves) | Paddy | Vegetables (focus on cassava and potatoes) | Sorghum | Wheat | Sunflower |
| Sesame | Soyabeans | Kidney beans (and other pulses) | | | Aquaculture | | Poultry | | Red meat | Dairy | Fodder |

# 2 The Agriculture Master Plan is a pillar to transform the sector

# 2. The Agriculture Master Plan: a pillar to transform the agricultural sector

## A. Agricultural transformation as a driver of economic prosperity

**Tanzania's ambition, as set out in its Vision 2050, is to reach upper middle-income status by that date.** Tanzania achieved lower middle-income status in 2021. Making the transition to upper middle-income status will require significant growth. Gross National Income (GNI) per capita, $1,120 in 2021, will have to quadruple to $4,256. After taking population growth into account, the ambition implies GDP would have to grow by ~8% each year from now until 2050. Maintaining this rate of growth consistently over 25 years will require a transformation of the economy. Developing agriculture is a critical first step.

**Transforming the agricultural sector is a prerequisite for broader economic prosperity. Agriculture is one of the largest contributors to GDP (28%) and employment (65%) and serves as a critical enabler for the rest of the economy.** Agricultural transformation will be a critical driver of economic growth as it will lead to an overall increase in GDP, reduce poverty, safeguard sustainable and resilient food systems, and free up workforce capacity.

**Agricultural transformation** is a comprehensive and deliberate process encompassing strategic changes, innovations, and reforms within the agricultural sector with the aim of achieving sustainable and inclusive growth. It involves the adoption of modern technologies, improved farming practices, and systemic changes across various elements of the agricultural value chain including production, processing, distribution, and marketing. Agricultural transformation is designed to enhance productivity, increase efficiency, promote sustainability, improve resilience to challenges such as climate change, alleviate poverty, increase gender equality and contribute to broader economic development through innovation, investment, and policy reforms. As it proceeds, this transformation will free up some of the agricultural workforce to meet demand from other economic sectors.

Agricultural transformation can lead to important **outcomes**:

• **Increasing GDP**: productivity gains drive increases in agricultural production which not only directly adds to GDP, but also contributes to the growth of other sectors via a multiplier effect. The agricultural sector is a direct consumer of other sectors (e.g., inputs, building, and power) and drives downstream activity (e.g., intranational logistics and exports). Additionally, increases in smallholders' disposable incomes and investments in infrastructure contribute to activity in the rest of the economy

• **Reducing poverty**: rural incomes and living standards increase with access to inputs such as modern technologies, improved practices, better market access and greater added value, diversification, knowledge and training, agribusiness opportunities, and finance. Such financial empowerment can ripple through local economies, fostering growth in markets, services, and infrastructure development and supporting rural development

• **Ensuring resilient food security**: gains in productivity enable a country to meet domestic food demand while creating surpluses for exports. This generates income and strengthens the country's position in the global food market. Diversification of the sector, with integration of women in food systems, generates more nutritious food and resilient practices (e.g., agroforestry, better quality input, and enhanced data access) help counter weather yield volatility. These resilient, climate-smart practices also help preserve natural habitat

• **Ensuring sustainability:** climate- and nature-smart practices help preserve natural resources and biodiversity, improve soil health, increase long-term productivity and reduce agriculture's carbon footprint

• **Freeing up the workforce**: improvements in farming techniques, mechanisation, and infrastructures translate to higher yields, releasing some of the agricultural workforce to engage in other sectors, contributing to overall economic growth and further diversification, particularly for women. Equalising women's access to agricultural inputs, including time-saving equipment, and increasing the return to these inputs is critical to close gender gaps in agricultural productivity and allow for an equal share of the workforce to be freed up for other activities

**Transforming agriculture to capture these outcomes is a multi-year process with multiple stages.** Many countries (e.g., Ethiopia, Vietnam, and Brazil) have successfully transformed their agricultural sector by addressing challenges similar to those of Tanzania. Although each journey is uniquely shaped by historical and geographical context, typically there are four phases in each transformation. These are expansion/commercialisation, industrialisation, structural transformation, and maturation. They are shown in the graph below.

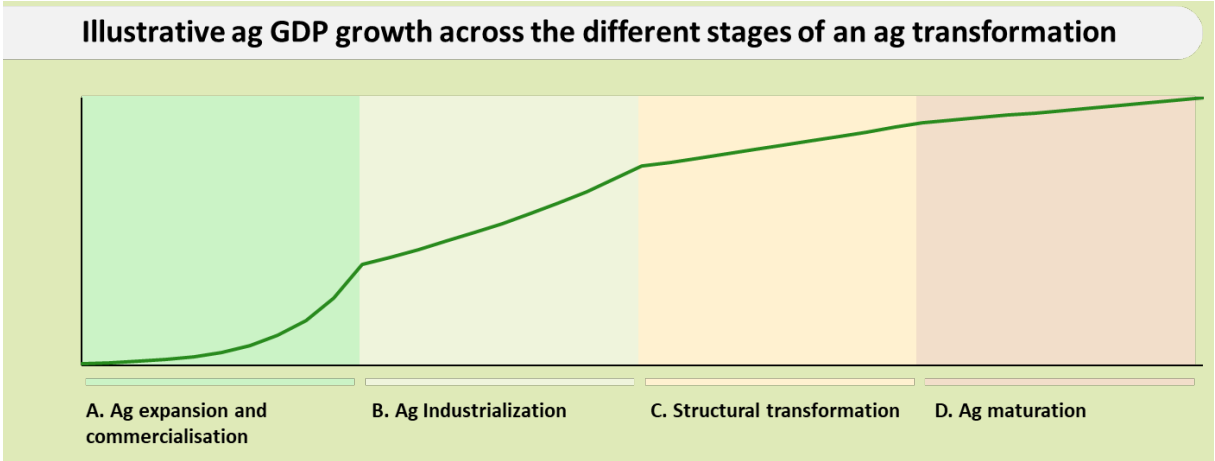



*Figure 1: The four stages of agricultural transformation with illustrative AgGDP growth*

- **A. Expansion and commercialisation:** a productivity shock increases agricultural productivity creating surplus outputs. There is a shift to higher value commodities and accompanying investment in processing and marketing infrastructure. Rural labour shifts up and down the value chain

- **B. Industrialisation:** farming becomes more capital-intensive; value added by agribusiness and agro-processing grows. The rural sector expands into peripheral industries and enables new businesses (e.g., financial industries and insurance). Rural households shift toward less agriculturally-based income and to more off-farm work

- **C. Structural transformation:** as the agricultural sector becomes more efficient and other economic sectors grow, there is a gradual decline in the percentage of agricultural GDP and a shift of labour away from agriculture and the food sector. Urbanisation typically accompanies this structural transformation

- **D. Maturation:** the agricultural sector is no longer a growth sector but rather one of a number of mature industries within the economy. Rural household income from farming shows limited growth, urbanisation rates have matured and typically the proportion of household expenditure accounted for by food is low

**A detailed sectoral diagnostic indicates Tanzania is currently in Stage A (expansion and commercialisation) of its agricultural transformation**. It has significant potential to increase its production but is still limited by critical bottlenecks throughout the value chain. These include but are not limited to low use of quality inputs, restricted market access, limited processing capabilities, inadequate mechanisation, constrained access to financial resources, infrastructural deficiencies, and limited commercialisation. These challenges have started to be addressed. Making good progress by 2030 would move the transformation to its second stage of industrialisation. Further ahead, these projections suggest Tanzania could start its structural transformation by 2040 and its agricultural sector would start its maturation phase by 2050.

**Many countries have successfully undertaken this journey.** Although their transformations have taken place against varying contexts, a number of factors are consistently associated with success. Notably these include independent private sector, integration, inclusivity, and sustainability:

- **A flourishing independent private sector** that can prosper without continuous investment from Government or donors with rural change agents (e.g., extension workers) to drive growth. For example, Kenya's agricultural transformation has been supported by a business environment conducive to the private sector: the horticulture sector is dominated by the private sector, the country has been successful in attracting FDI to agriculture, and Kenya is ranked third in Africa in terms of ease of doing business[1]

- **An agricultural sector that is integrated within the economy.** Structural transformations lead to the growth of other industries that can assimilate labour flowing out of the agricultural sector

- **Growth is inclusive** and characterised by robust rural development, demand and income levels. In Morocco, for example, rural poverty has been addressed by cultivating high-value crops by smallholders with irrigated systems that can be sold into local, regional and European markets. The result was a dramatic increase in both land productivity (up 30%) and rural incomes. Inclusivity also includes ensuring that human capital is developed across the wide range of stakeholders in the sector

- **Transformations are sustainable**, reflecting growing concerns globally about climate-smart agriculture, biodiversity, nutrition, deforestation, and gender inclusivity

**Overall, these transformations have been guided by a comprehensive strategy and delivery mechanism** that supports alignment of the entire sector. In Ethiopia, for example, the Agriculture Transformation Agency provided a backbone for implementation. In the same spirit, this document is intended to provide a clear implementation roadmap for the first stage of the transformation and a catalysing vision for 2050. In turn, this plan will be supported by the newly-designed Agriculture Transformation Office (ATO).

[1] World Bank, *Doing Business 2019*, p.5

See Annex A for examples of successful agricultural transformation from around the world. Unsuccessful transformations have also been investigated to ensure pitfalls and mistakes would be avoided in this AMP.

## B. The design of the Agriculture Master Plan (AMP)

**The Agriculture Master Plan (AMP) is designed to guide the sector through a full transformation, serving as the backbone of a wider economic transformation by 2050, and setting out a concrete action plan for implementation in the medium term (to 2030).** The AMP's roadmap builds on previous strategies and brings together stakeholders from across the agricultural ecosystem. It is intended to contribute to the emergence of a thriving and sustainable agricultural sector.

### *Iterative process of the AMP*

**The AMP was developed iteratively with multiple stakeholders in three broad steps**. The process is summarised in the figure below.


*Figure 2: The iterative development process of the AMP*

### Step 1: Set the targets and run the initial country diagnostic

**It is vital first to align on the approach and guiding principles to be used in the design of the AMP**. It will reflect best practices identified for similar exercises, as well as discussions with key stakeholders about their priorities and aspirations for the future of the agricultural sector.

**Next, the Government's ambitions for 2030 and 2050 must be translated into ambitious but achievable targets that map onto transformation pillars.** To streamline the work of the Government it is also important to align with other ongoing exercises – in this case, that includes the work of the Planning Commission in developing a broad 2050 vision for the country.

**Once these targets have been set, a diagnostic of the sector to understand the current state of agriculture in Tanzania can in turn identify the main challenges, biggest opportunities, and key commodities.** Such a diagnostic comprises a review of the historical context of the agricultural sector and analysing historical and current guiding documents to

capture learnings from their successes and failures. The process continues with the assessment of a wider range of documents (e.g., national agricultural sector reviews, regional reports, and agricultural research publications), engagement with stakeholders (e.g., cooperatives, producer associations, and NGOs), and analysis of data sources (e.g., national accounts data, data from the International Food Policy Research Institute (IFPRI), and material from the Food and Agriculture Organisation (FAO)). The combination of these activities provides a comprehensive perspective of the situation and challenges of the sector across value chains and commodities. From these challenges, multiple opportunities emerge which can be prioritised based on their impact and feasibility. Finally, 20 high-impact commodities have been prioritised based on their share of agricultural GDP, growth potential, contribution to nutritious diets and food security, resilience/adaptation potential, and relevance to smallholders (in terms both of income and inclusion potential).

**Step 2: Flagships to enable key commodities to develop**

**The second step builds on the diagnosis by identifying key flagships which can enable growth in the cultivation of the 20 prioritised commodities.** These flagships are in turn mapped against the transformation pillars of the AMP. These flagships are selected based on the opportunities identified in the diagnostic. It is critical, however, to prioritise these opportunities to identify the flagships which are most critical to transform the sector. Experience in other countries shows that without proper prioritisation, resources are spread too thin, limiting the overall impact of the transformation. The same rational was used to justify prioritising 20 out of the 150+ commodities of the country.

**Flagships** are ambitious development projects that can catalyse the achievement of priority areas in the Agriculture Master Plan. They have a lifetime of at least five years and comprise multiple initiatives. Flagships are designed to unlock large opportunities by resolving specific issues across the value chain, enabling commodities to grow and thus yield value.

**Once flagships are identified, they are attributed yearly KPIs, funding sources, clear responsibilities, and targeted regions. They are explicitly linked to the prioritised commodities.** This is done by building on existing case examples from both Tanzania and beyond, complemented by critical experience from stakeholders on the ground to clarify what initiatives are needed for successful implementation. The cost of these initiatives is then assessed to help calculate and prioritise the impact based on cost effectiveness as well as to identify the sources of funding. Flagships are then linked to prioritised commodities to ensure these efforts focus on the commodities with the highest potential and that progress in the pursuit of these priorities is unlocked by resolving key bottlenecks from farm to fork. Linking flagships to commodities adds a region-specific lens to the initiatives. It is important to note that commodities other than those in the priority list will still be supported indirectly through the development of the flagships, but will not be subject to the same level of focus as the prioritised ones.

**Flagship impact is assessed to ensure that collectively they achieve the desired outcome while staying within budget.** This is done using the Rural Investment and Policy Analysis (RIAPA) model and Agricultural Investment Data Analysis (AIDA). RIAPA is a forward-looking framework which captures activity across the entire economy and unpacks the agri-food system by tracking how policies, investments, and climate risks affect different sectors, workers, and population groups. AIDA projects public investment impact across the agrifood system and tracks both systemwide investments and the targeting of specific value chains. By combining both models it is possible to take account of both impact at commodity level and

across the broader economy and population. These flagships may thus be assessed in terms of Tanzania's broader development goals.

**Finally, an advanced geospatial model is used to assess the potential of certain prioritised commodities**. This includes a detailed suitability analysis to understand where crops are currently being grown and where they could potentially be expanded to. Critical in this analysis is ensuring that potential land expansion is done in a sustainable way without deforestation or loss of biodiversity.

**Step 3: Implementation modalities**

**In developing the Master Plan, it is critical to ensure that it is supported by a relevant and supportive transformation governance with an Agriculture Transformation Office (ATO) at its heart.** The ATO's role is to support and oversee the implementation of the Master Plan. It is responsible for facilitating coordination and harmonious collaboration between Ministries and other stakeholders. In addition, the ATO is also tasked with supporting both Ministries in designing detailed governance and making links to budgets and adequate financing mechanisms. The provision of adequate coordination mechanisms with the LGAs and the key ministries is vital.

**Finally, it is critical to ensure that the AMP fits within the local and international commitments made by Tanzania to align implementation of these commitments.** In particular, ensuring the AMP sets Tanzania up for success to deliver on its climate and CAAPD commitments is critical for the AMP to sit within the broader food systems reflections.

***Collaborative nature of the AMP***

**The AMP was developed in consultation with, and with the input of, a wide range of stakeholders and resources**, including government, private sector, civil society, development partners, and research institutions. The figure below sets out the stakeholders and data sources involved in the design of the AMP.

| | |
|---|---|
| **250+** | **Government stakeholders engaged in the process:** More than 250 government stakeholders were engaged from all across Tanzania and all levels of government, including the Ministries of Agriculture and of Livestock and Fisheries, sectoral lead ministries, working groups, research institutes, local government, agriculture boards, two Parliamentary Committees and others |
| **60+** | **Organizations involved:** More than 60 organizations were consulted in preparation of this Master Plan; they include large domestic and international firms, SMEs, academic institutions, cooperatives and producer associations |
| **50+** | **Experts consulted :** More than 50 experts were consulted in the development of the Master Plan, including from government, academia, IFPRI, members of the Agricultural Development Donor Group, and others |
| **150+** | **Reports and data sets analyzed:** More than 150 documents and datasets were analyzed to inform the baseline diagnostic exercises, flagships design, impact sizing and feasibility tests. These include previous strategies, IFPRI data, various national and regional reports, program documents, and others |
| **~40** | **Field visits conducted:** Around 40 field visits were conducted in the course of developing the Master Plan, including visits of agricultural associations, farmer groups, processors, producers, cooperatives, industrial parks and farms. Among these were the Tanzania Horticulture Association, Dakawa Irrigation Scheme, World Vegetable Center, breeding sites for TARI, Arusha Poultry Keepers Association, Nronga Women's Dairy Cooperative, Frostan Ltd., the Bagamoyo agro-industrial park, Victoria Perch Ltd., Nile Perch Fisheries Ltd., various landing sites, cage farms, and pond farms |
| **50** | **Syndication meetings held:** 50 syndication meetings were held with government agencies, smallholder, cooperatives, commercial players, finance providers, NGOs and others. These included the Ministry of Agriculture working group and various directors/assistant directors, the National Irrigation Commission, all national crop boards, the Tanzania Agriculture Research Institute (TARI), members of the Tanzania Commercial Poultry Association, the Tanzania Livestock Research Institute, the Tanzania Industrial Fishing and Processors Association, and the Tanzania Agriculture Development Bank |

*Figure 3: Reports, stakeholders, organisations, experts consulted in the AMP development process*

### *Guiding principles of the AMP*

**The guiding principles of the AMP are central to its design.** The Master Plan follows ten guiding principles to achieve its ambition and targets. These inform the approach taken throughout the development process, particularly in designing the flagships and prioritising the commodities.

**Principle 1 – High impact and demand-driven**: the AMP emphasises a demand-driven strategy, prioritising commodities and agro-processing based on comprehensive assessments of existing and future market demand. Through rigorous market analysis, it identifies products or services with high demand or potential for increased demand. Simultaneously, the AMP adopts a high impact approach, strategically prioritising interventions within specific commodities and regions to unlock substantial transformations. By aligning production with market needs and concentrating efforts where the potential for significant impact is highest, the AMP aims to drive rapid, scalable, and sustainable advancements within the agricultural sector.

**Principle 2 – Implementation-focused**: the AMP is designed around strategic actionable initiatives, known as flagships, which serve as focal points for targeted interventions within the agricultural sector. These are comprehensive and high-impact programmes strategically aimed at addressing critical challenges for prioritised commodities. By concentrating efforts on

projects that can yield rapid and tangible results within a concise timeframe, the AMP aims to demonstrate immediate progress, foster momentum, and drive significant advancements across the agricultural landscape. The implementation of the AMP is supported by the ATO, in turn itself a critical component of success.

**Principle 3 – Market-led**: recognising the critical role of the markets and the private sector in driving economic growth and innovation, the AMP assumes market realities inform decisions and that private enterprises are actively engaged and involved. This principle aims to create an enabling environment that fosters entrepreneurship, innovation, and investment within the agricultural sector. It emphasises collaboration with private entities, encourages partnerships and knowledge sharing, and seeks to draw on the expertise and resources of private businesses to drive sustainable growth and development.

**Principle 4 – Inclusion**: the AMP prioritises addressing gender disparities and places emphasis on integrating women and young people into the core of its approach to ensure that initiatives and strategies are inclusive and considerate of the needs, opportunities, and contributions of both women and young individuals. By integrating these groups, the AMP is intended to achieve a more equitable and prosperous agricultural sector.

**Principle 5 – Collaborative approach**: this principle emphasises the importance of collaboration and coordination between all key stakeholders across the agricultural value chain. The AMP promotes the establishment of a healthy network where various entities including development partners, farmer associations, women and youth networks, Government bodies, and the private sector work collectively. The AMP recognises that different stakeholders have different roles and responsibilities in the transformation and aims to clarify these for better outcomes.

**Principle 6 – Resilience and sustainability**: the AMP places a strong emphasis on developing resilient and sustainable food systems. This requires strategies for building resilience against climate change impacts, market volatility, and geopolitical factors. The AMP also advocates for sustainable agricultural practices that reduce greenhouse gas emissions, conserve natural resources, reduce environmental degradation, and ensure long-term food security while addressing challenges posed by various disruptions.

**Principle 7 – Better nutrition**: recognising the importance of nutrition and health, the AMP integrates these aspects as key components in its initiatives and prioritisation of commodities. The AMP prioritises actions that lead to improved dietary patterns and better nutritional outcomes across the country.

**Principle 8 – Based on Tanzania's strengths**: this principle emphasises identifying and harnessing the country's unique resources, capabilities, and favourable conditions for agricultural development. By capitalising on these strengths, the AMP can maximise the potential for an agricultural transformation that is tailored to Tanzania's specific context and potential.

**Principle 9 – Replicating proven models**: rather than reinventing the wheel, the plan focuses on identifying, learning from, and replicating successful models and practices that have proven effective within Tanzania and globally. This approach optimises resource utilisation and accelerates progress by implementing strategies with proven track records of success. This also includes avoiding pitfalls and blind spots from past experiences.

**Principle 10 – Organisational sustainability**: the AMP embeds organisational sustainability in its design and governance to ensure that it becomes integrated in Government activity and its sustained impact is better guaranteed. Moreover, the existence of a stable organisational

structure for the implementation of the AMP (in the form of the ATO) supports governance as well as capability building required to achieve the AMP. It contains annual targets and clear financing needs to ensure continuity and accountability.

## C. Vision 2050

**Vision 2050 represents Tanzania's transition to becoming an upper middle-income country and the role of the agricultural sector to support this.** It sets out the current state of the agricultural sector, its potential and the results of discussion with national leaders. These are complemented by detailed modelling and analysis to ensure the vision is grounded in grounded in analytical rigor. The next page summarises Vision 2050, establishing agriculture as playing a central role in Tanzania achieving its ambition.

## Vision 2050

By 2050, Tanzania's agriculture sector will be a driving force of economic prosperity with **Ag GDP quintupling to $100 billion,** as a result of decades of unprecedented growth

At the heart of this vision is a commitment to at least **triple productivity of key commodities in a resilient and sustainable way** which will ensure that **every Tanzanian enjoys security of nutritious high-quality food,** making hunger a relic of the past

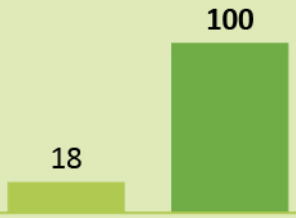
This leap forward will fuel rural development, **as increased smallholder productivity and access to markets will double their income** and eradicate extreme poverty

Simultaneously, a surge in agribusiness will **increase large-scale production and increase food processing fivefold,** creating millions of well-paid jobs, all the while placing women and youth at the core of this transformation

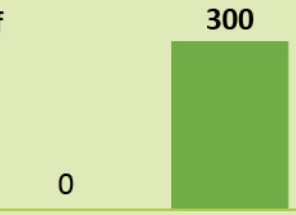
This growth in production and processing will steer the country towards becoming a breadbasket of the region and a powerhouse on the global export market, with **over $20 billion in agriculture exports**

## Key metrics by 2050

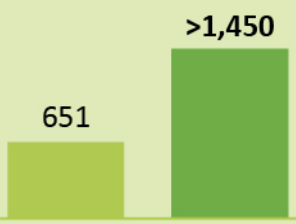
**Agriculture GDP,** Bn $



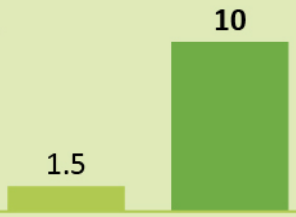

**Productivity improvement of key commodities,** %



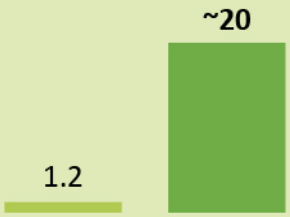

**Average smallholder income,** $




**Value of Agroprocessing,** Bn $

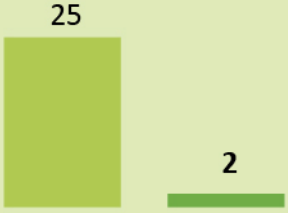



**Net exports,** Bn $

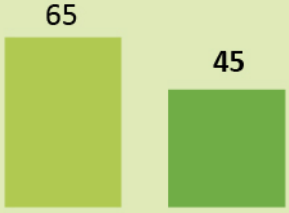



## Broader outcomes of the transformation by 2050

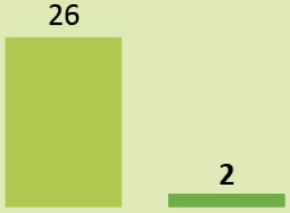
**Undernourishment,** %




**Share of population working in agriculture,** %




**People in poverty,** Mn people



**The transformation will be supported at each stage by a set of enablers**. At each stage of the transformation, a differentiated approach will be needed to achieve Vision 2050. The five pillars of Vision 2050 (a productive, sustainable and resilient food system, empowered smallholders, a robust agri-enterprise ecosystem, regional and global leadership, and a best-in-class enabling environment) will involve different enablers at each of the four stages of transformation. The figures below indicate these enablers across the Vision's pillars in each of the first three stages of agricultural transformation up until 2050.

| Vision | Key enablers for Stage A: Agricultural expansion and commercialization (2024-2030) |
|---|---|
| **Productive, sustainable and resilient Food System** | • Develop **large scale irrigation projects** to improve productivity while decreasing dependence on rain<br>• Support transition to **climate-smart agriculture practices** to improve resilience, improve soil health<br>• Develop the **seed production capacity** (gov't, private sector) to ensure sufficient capacity for food and feed |
| **Empowered Smallholder Farmers** | • Develop **models to unite farmers** into producer groups, cooperatives or around a central buyer to improve their access to inputs, finance, markets and ensure adequate off-take<br>• Enable access to improved, customized **inputs** to expand priority crop value chains (including seeds, chemicals, machinery, breeds, vaccines, equipment, software, feed, fish fingerlings, fishing gear) |
| **Robust Agri-Enterprise Ecosystem** | • **Review investment, business environment** and make changes to create a stable environment<br>• Identify **priority local investment opportunities** and draw up business plans to attract prospective investors<br>• Ensure **access to warehouses** to store excess produce to ensure stable food market prices and the conversion of excess supply in additional value<br>• Develop **processing capacity of key commodities** to enhance their value addition |
| **Regional and Global Agriculture Leader** | • Develop **adequate infrastructure** to enable modern, commercialized export activities including cold chain and export facilities |
| **Best-in-Class Enabling Environment** | • Strengthen **local research capacity** to achieve land, productivity gains; strengthen extension services to bring the knowledge to farmers<br>• Develop **financing, insurance mechanisms** to allow for increased investment in the sector and to reduce financial exposure to income loss<br>• Strengthen **land, water right policies** to generate investment in priority commodities to drive transformation<br>• Develop **digital environment** through high quality collection of data and availability to stakeholders though impact-focused use-cases<br>• Ensure food security by developing nutritious crops, enhancing **warning systems** and strengthening the **food reserves** |

*Figure 4: : Key enablers of agricultural Vision 2050, 2024-30*

| Vision | Key enablers for Stage B: Agricultural industrialization (2031-2040) |
|---|---|
| **Productive, sustainable and resilient Food System** | • Continue to develop **irrigation projects** with more advanced technology and with a focus to private sector development<br>• Advance **sustainable practices** such as climate smart agriculture, resilient seeds and lower emission livestock while capturing benefits through the carbon markets<br>• Continue to develop a strong and effective **Monitoring, Control and Surveillance** system for fisheries |
| **Empowered Smallholder Farmers** | • Graduate **farmer producer groups into formalized SMEs**, with established networks for inputs, processing, and offtake<br>• Support farmers to continue to **increase yields** across a wider range of commodities through best practices, access to finance, better inputs and increased usage of technology |
| **Robust Agri-Enterprise Ecosystem** | • Establish **essential infrastructure and explicit incentives** for the development of priority commodities with a focus on value-addition<br>• Assist in the **development of funds, risk sharing mechanisms** to drive investment in agri. opportunities<br>• Support capital attraction through further enhancement of the business environment and large PPP projects<br>• Support capital attraction towards **export focused processing/packaging** |
| **Regional and Global Agriculture Leader** | • Invest to scale **key transport hubs** through direct investments and PPPs<br>• Implement a broad **trade policy adjustment** for priority commodities to reduce import and export duties as well as indirect costs<br>• Ensure **quality standards and compliance** for export and supply chain reporting, **traceability** |
| **Best-in-Class Enabling Environment** | • Scale the **Early warning system** to incorporate advanced weather forecasts and Gen AI to increase its efficiency<br>• Scale **digital extension** services to ensure coverage of majority of smallholders<br>• Extend **digital registration** to majority of smallholders and livestock and a ensure single source connected across key stakeholders<br>• Ensure majority of smallholders have their **land right secured** through titles |

*Figure 5: Key enablers of agricultural Vision 2050, 2031-40*

| Vision | Key enablers for Stage C: Structural transformation (2041-2050) |
|---|---|
| **Productive, sustainable and resilient Food System** | • Capture high value from the **production of sustainable commodities** through green premium and carbon markets<br>• Develop **climate adaptation to reduce climate vulnerability** as the rate of hazards will increase by 2050 |
| **Empowered Smallholder Farmers** | • Support farmers with shift towards **precision agriculture that is less labor/resource intensive** (e.g., micro irrigation) and can support higher yields<br>• Support development of supply chains of **higher-value produce towards urban centers** (for consumption of growing middle class)<br>• Support emergence of **large-scale collaborative models** / partial consolidation for gains of efficiency while inclusive & fair<br>• Develop **transfer and redistribution programs**, market regulations and incentives for inclusiveness |
| **Robust Agri-Enterprise Ecosystem** | • Support **gains of efficiency downstream** by supporting dissemination and adoption of new technologies<br>• Ensure investment / **capital attraction** where bottlenecks appear as ag continues to grow<br>• Support **diversification / development towards new markets** (e.g., alternative proteins)<br>• Support the **development of industry and services sectors that consume ag produce** (e.g., textile industry, CPG, trading) |
| **Regional and Global Agriculture Leader** | • Further develop **exports regionally** as other neighboring countries transition towards high middle-income countries through trading infrastructure development, conducive trade policies and standard setting |
| **Best-in-Class Enabling Environment** | • Integrate **digital technologies** as a key components of all stakeholders, connecting them together, supporting daily decision making<br>• Invest in **educational and training institutions** to (re-)school the labor force for integration into new sectors in the economy with the vision of creating a knowledge economy down the road |

*Figure 6: Key enablers of agricultural Vision 2050, 2041-50*

## D. 2030 Ambitions

**In order to achieve Vision 2050, it is critical to set out well-defined ambitions for 2030 to achieve the first stage of Tanzania's agricultural transformation** – that of agricultural expansion and commercialisation**.** The pathway for this is set out in greater detail in the flagship and commodity section, but the ambition is outlined below.

***Reaching an agricultural GDP growth rate of 10% by 2030 will be essential if the sector is to act as the backbone of the economy****. This growth is, however, not sustainable in the long run without channelling a disproportionate share of Government spending to the sector. This would not yield the highest cost-benefit ratio. After a period of rapid growth, then, it is expected that sectoral growth will slowly decline and that its share of the total GDP will go down.*

## Ambition 2030

Reach 10% annual growth rate in the agriculture sector by 2030

Enhance productivity of key commodities by >50% in a sustainable and resilient way

Increase average income of 40 Mn smallholders by ~25%

Promote the development of medium and large-scale commercial entities across the value chain

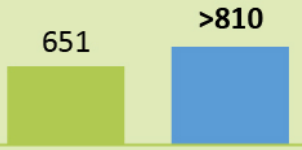
Facilitate export to reach 6 Bn$ export

## Key metrics by 2030

**Agriculture GDP,** Bn $


**Productivity improvement of key commodities,** %


**Average smallholder income,** $

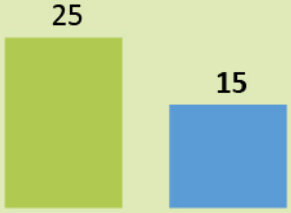



**Value of Agroprocessing,** Bn $

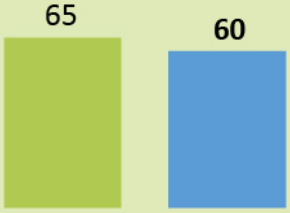

**Net exports,** Bn $


## Broader outcomes of the transformation by 2030

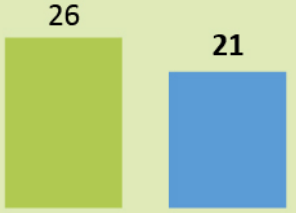
**Undernourishment,** %




**Share of population working in agriculture,** %




**People in poverty,** Mn people



# 3 The state of the agricultural sector in Tanzania

# 3. The state of the agricultural sector in Tanzania

## A. Current and historical context of the agricultural sector in Tanzania

### Current context

**The agricultural sector is the cornerstone of Tanzania's economy but is beset by numerous challenges**. Agriculture in Tanzania is one of the largest contributors to GDP and the country's largest employer. In 2021 it accounted for a 28% share of Gross Domestic Product (GDP) and employed approximately 64% of the workforce.[2,3] It is also the most land-intensive sector of the economy, accounting for 40% of total land area. The sector grew by 32% between 2015 and 2021 and is currently growing at an annual rate of around 4%. While current growth lags behind the Government's target, there is potential for significantly enhanced growth in the years to 2030 if a number of critical challenges can be addressed. These include restricted market access, limited processing capabilities, inadequate mechanisation, constrained access to financial resources, infrastructural deficiencies, and limited commercialisation. In particular, female smallholders enjoy lower rates of agricultural productivity because they are subject to inequitable access to agricultural inputs including family labour, high-yield crops, pesticides, and fertiliser. All of this results among others in Tanzania's productivity being lower than that of its peers (e.g., maize, wheat, sorghum, and paddy have yields ~3x less than the best in East Africa).[4] However, there are promising opportunities to be harnessed and upon which Tanzania can capitalise.

**The agricultural landscape in Tanzania is predominantly dominated by smallholders. They contribute between 70% and 95% of the total production across crops, livestock and fisheries**. These smallholders, who typically work on farms of 0.9 to 3 hectares, raise their animals as nomads or catch fish in lakes and oceans typically have low productivity. Such smallholders are usually active in at least two of these subsectors. Crops represent the largest subsector, contributing 65% of total agricultural GDP. This is followed by livestock (28%) and fisheries (7%). Crops encompass a diverse array of produce and include staple food crops. The principal ones are cassava (7.2m MT in 2021/22), maize (6.4m MT), banana (5.2m MT), and paddy (1.7m MT) and are grown alongside cash crops that include sugar (379k MT), cashew nuts (240k MT), and cotton (145k MT). Livestock products include predominantly beef, dairy, poultry, and the meat of goats, sheep, and pigs. The fisheries sector predominantly comprises capture fisheries in both rivers and the ocean (96% of production), as well as an increasing share of aquaculture. A breakdown of the agricultural GDP by subsector is shown on Figure 7.

[2] JICA

[3] World Bank

[4] FAO

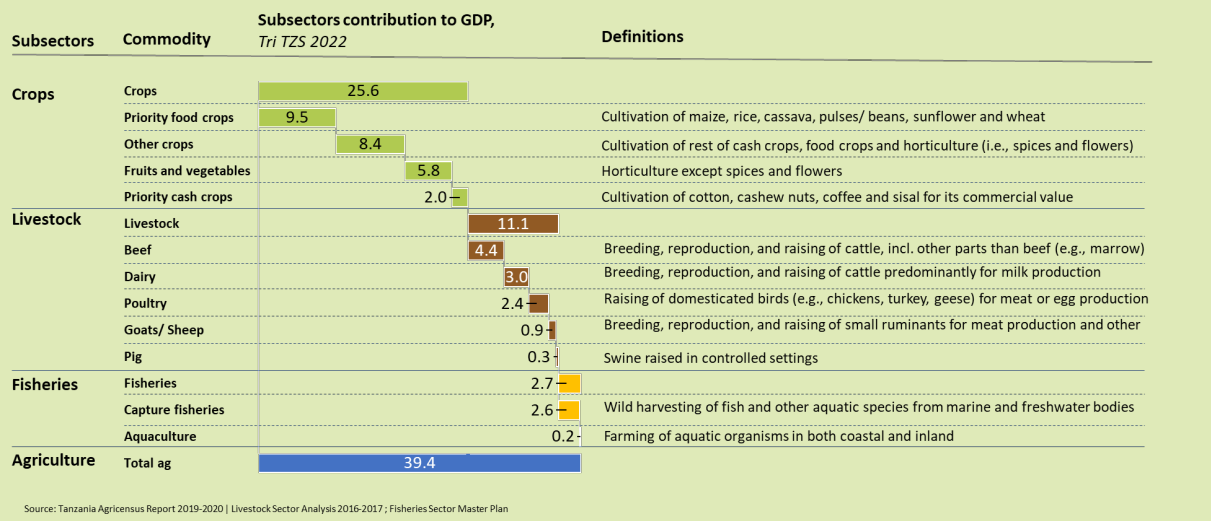



*Figure 7: Breakdown of agricultural GDP by subsectors and commodity*

**Since independence, Tanzania's successive Governments have made substantial commitments to develop the sector through various programmes and initiatives**. Recognising the agricultural sector's challenges and opportunities, these strategies have aimed at enhancing agricultural productivity, promoting market-oriented practices, accelerating the commercialisation of agriculture, ensuring food security, attracting private sector capital, and fortifying institutional frameworks. Taken together, these initiatives have led to measurable improvements in various agricultural metrics over time. Building on this progress, the Government recently increased its agricultural budget allocation from $127 million in fiscal year 2021/22 to $412 million in 2022/23. These investments have been directed towards critical areas such as irrigation and mechanisation, input enhancement, added value processes, and the creation of avenues specifically tailored for the empowerment of women and young people. This forward-looking approach seeks to harness the untapped potential within the sector and foster its transformative growth.

**Past initiatives have contributed to the evolution of key agricultural metrics, showcasing advancements in parameters** such as crop yields, livestock production, fisheries output, land under cultivation, and other pertinent indicators. These improvements signify the cumulative effects of past strategies and interventions, illustrating progress in agricultural development within Tanzania.

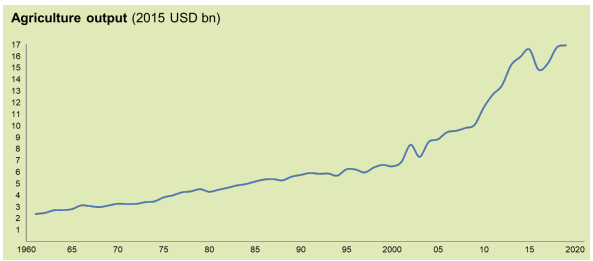



*Figure 8: Agricultural output*, 1960-2020 (bn 2015 USD) (OWID)*

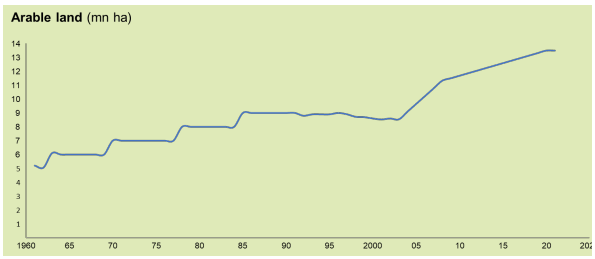



*Figure 9: Arable land, 1960-2021 (mn ha) (FAO)*

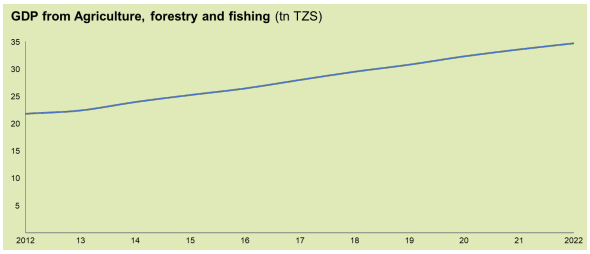



*Figure 10: GDP from agriculture, forestry and fishing, 2012-22 (tn 2015 TZS) (IFPRI)*

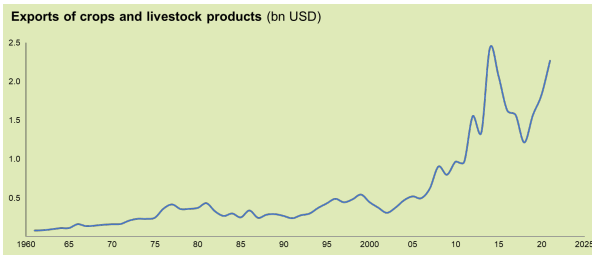



*Figure 11: Export of crops and livestock products**, 1961-2021 (bn USD) (FAO)*

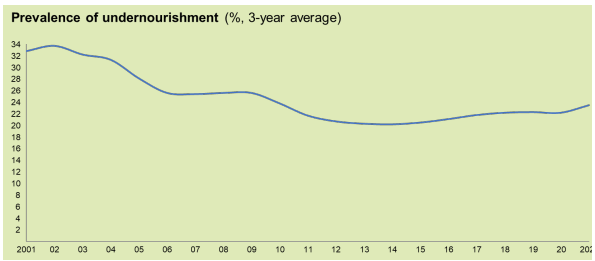



*Figure 12: Prevalence of undernourishment, 2001-21 (%, 3-year average) (FAO)*

*Fisheries sub-sector (not included) is responsible for 6% of Ag GDP

**90% of fisheries output is consumed locally

## Historical context

**Understanding the experience of the past six decades is important if critical learnings are to be included in the formulation of the AMP**. Analysing the successes, challenges, and lessons learned from the implementation of these strategies provides invaluable insights essential for designing an effective and responsive framework for the future. Drawing on these insights can ensure the forthcoming AMP is better equipped to address contemporary challenges, capitalise on emerging opportunities, and effectively steer Tanzania's agricultural sector towards sustainable growth and development. While the Government continues to build on past strategies (e.g., through current commitments to open up the sector to private investment, invest in large-scale bloc farming, and promote mechanisation), it also recognises the need to harmonise them into one document. This consolidation of transformational efforts will ensure clarity for all stakeholders regarding the purpose, targets, and flagships for the sector moving forward.

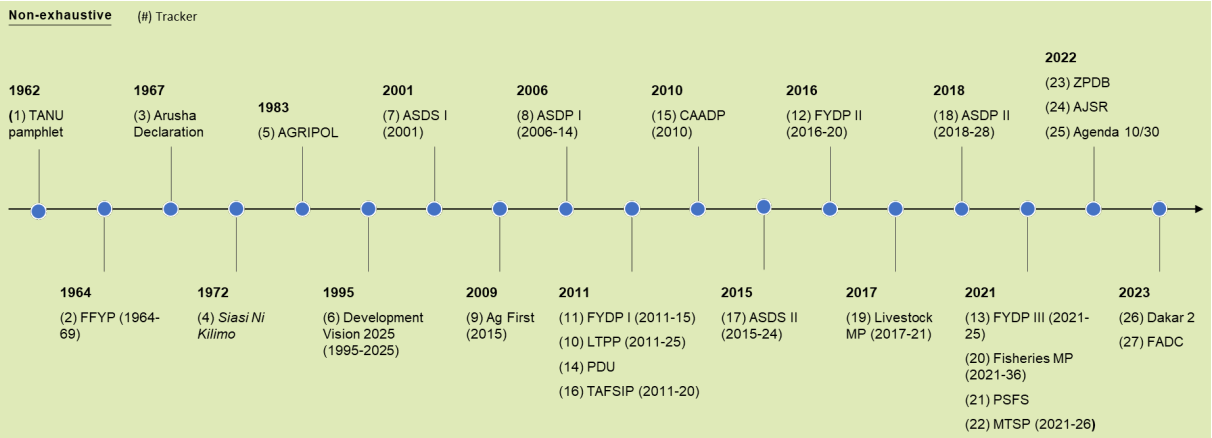



*Figure 13: Tanzania's key agriculture-related strategies*

The 60s and 70s: **From colonial capitalism to socialist ideals to modernisation**

**With independence, the agricultural landscape shifted from a colonial system to one focused on local empowerment.** Julius Nyerere's socialist-oriented TANU Ujamaa (Swahili for familyhood, communal living') pamphlet in 1962 was intended to empower local smallholders and reduce reliance on foreign-owned farms. This period witnessed the departure of foreign-owned settler farms, leaving vast agricultural lands abandoned. The early post-independence agricultural policy aimed to improve and transform the sector, emphasising cooperative expansion, extension services, and community development.

The dominant transformation approach was reflected in the First Five Year Plan (1964-69), which focused on villagisation and river basins. The 1967 Arusha Declaration emphasised self-reliance and equality, leading to nationalisation efforts and the promotion of ujamaa villages (by 1976, 13 million were living in villages).[5] During this period there was a focus on technical agricultural methods, as evidenced in the policy statement Siasi Ni Kilimo ('politics is agriculture') and large-scale projects. Alongside ujamaa villages, state-operated farms (through entities such as NAFCO in cereals, the Sugar and Ranching Corporations, and the Dairy Farming Company) were seen as pivotal in bolstering agricultural production.[6]

**However, the new system faced significant challenges.** There were inefficiencies in cooperatives, limited adoption of extension services, and resistance to community development initiatives. Villagisation had limitations and in some cases was discontinued. However, agricultural production continued to grow, in part due to the ethos of 'Uhuru na Kazi' (freedom and work) championed by Nyerere.

**These early attempts at agricultural transformation highlighted the importance of cooperatives, extension, and community engagement**. Lessons include:

[5] 'Agricultural Policy, 1961–1967' in *Tanzania: A Political Economy*, Andrew Coulson, Oxford University Press, 2013

[6] 'Agricultural policies in Mainland Tanzania', Andrew Coulson, *Review of African Political Economy*, 1977

- *Revitalise the cooperative system*: address its inefficiencies by introducing better management practices, enhancing operational efficiency, and providing more targeted support for smallholder farmers to ensure wider benefits
- *Strengthen extension services*: overcome resistance and increase the adoption of extension services by tailoring information dissemination to local needs and integrating indigenous knowledge into modern agricultural practices
- *Engage the community*: revisit community development initiatives with a more participatory approach, respecting local customs, and involving communities in decision-making processes to ensure acceptance and effectiveness of the programmes
- *Evaluate and reform settlement schemes*: assess the limitations and challenges faced by settlement schemes like villagisation, considering local feedback, and making necessary revisions to ensure their viability and success
- *Support smallholder farmers*: prioritise support for smallholder farmers by providing access to credit facilities, technological advances, and necessary resources to enhance their productivity and sustainability

The 1980s and 1990s: **Market liberalisation, export agriculture, diversification, and industrialisation**

**From its earlier focus on smallholders, the next stage of Tanzania's agricultural transformation was characterised by the introduction of market liberalisation and whole-sector plans**. The 1980s saw the inception of AGRIPOL, a pivotal agricultural policy designed to revive economic growth. Departing from ujamaa, it emphasised secure land access and supported commercial farming (i.e., export-oriented crops, and raw materials for industry) as part of a broader shift towards market liberalisation. Despite initial challenges, further policy reforms in the 1980s and 1990s transitioned Tanzania's agriculture towards export-oriented practices. For example, non-traditional export crops were liberalised in 1986, food crops in 1989, and traditional export crops in 1993.[7] This continued opening up of the agricultural sector through liberalisation policies was part of a wider plan to transform Tanzania's economy overall. This was Development Vision 2025 (1995-2025), which outlined the country's overall development aspirations and has guided development efforts to 2025 to reach middle-income status.[8] It was critical, however, to ensure that in implementing these policies of liberalisation smallholders were supported and that no-one was left behind.

**Key lessons from this period include the importance of market-oriented agriculture and engaging the private sector**.

- *Secure land access*: continue ensuring secure long-term access to land for farmers to promote private enterprise and commercial farming

[7] *Tanzania – Agricultural Sector Risk Assessment*, Carlos Acre and Jorge Caballero, World Bank, June 2015

[8] *Tanzania Development Vision 2025*

- *Promote market-oriented agriculture*: foster a conducive environment for export-oriented agriculture by supporting the cultivation of both export and domestic essential crops
- *Push for adaptation and resilience*: address adjustment difficulties and market dynamics while maintaining commitment to market-oriented agricultural practices
- *Conduct policy reform*: continue developing policies that align with the country's development vision, promoting a shift toward a diversified, semi-industrialised economy by taking advantage of agricultural potential
- *Engage the private sector*: encourage public/private dialogue and partnerships to enhance modernisation efforts, improve infrastructure, and promote technological advancements in agriculture

The 2000s: **Agricultural commercialisation and sector development**

**The 2001 Agricultural Sector Development Strategy set the stage more broadly for agricultural transformation**, leading to the Agriculture Sector Development Plan I (ASDP I) for the period from 2006 to 2015. ASDP I was Tanzania's first sector-wide agricultural programme, focusing on improving productivity, infrastructure, knowledge access, and technology use, achieving milestones in irrigation, market infrastructure, and food self-sufficiency. The key achievements of ASDP I included improvements in human and physical capacity at district, regional, and national levels; agriculture research services; support for agricultural input use (e.g., area under cultivation increased by 148%); irrigation schemes (irrigated areas increased from 264k to 461k ha between 2006 and 2014); marketing infrastructure for commodity added value (e.g., warehouses and crop markets); food self-sufficiency (the ratio increased from 103% to 123% between 2009 and 2016) and food price inflation (falling from 7.0% to 4.5% between 2006 and 2016). All of this was underpinned by bottom-up planning, with 75% of budget spent at local Government level.[9] ASDP I set the stage for Agriculture First ('Kilimo Kwanza') from 2009 to 2015. Agriculture First was intended to boost agricultural sector GDP by 10%. This strategy prioritised public/private dialogue, policy reforms, infrastructure development, and technology promotion to modernise agriculture. A critical element in this strategy was the provision of funding through a basket fund.

**Key lessons from these plans included:**

- *Ensure sustainable commercialisation*: continue – and expand – efforts to enhance agricultural commercialisation to increase farm incomes and reduce rural poverty, focusing on sustainability and long-term benefits
- *Strengthen institutional framework*: further strengthen the institutional framework for agriculture, clarifying public and private sector roles to foster a favourable environment for commercial activities
- *Promote access to agricultural knowledge and technology*: enhance access to agricultural knowledge, technologies, and marketing systems for farmers to improve productivity and profitability

[9] Agricultural Sector Development Programme II website (https://asdp.kilimo.go.tz/index.php/about)

- *Develop infrastructure*: continue to invest in essential infrastructure like irrigation schemes and marketing facilities to support agricultural added value and increase food self-sufficiency
- *Promote public/private engagement*: encourage continued public/private dialogue and partnerships to modernise agriculture, boost sector GDP, and ensure policy reforms align with developmental goals

The 2010s: **Implementation of development plans and integration with continental initiatives**

**The 2010s saw a series of Five-Year Development Plans (FYDPs), collectively the 15-year Long Term Perspective Plan roadmap (2011-25) designed to spur agricultural growth, integration with international commitments, and the development of sub sectoral Master Plans.** FYDP I was principally concerned with increasing growth (from 4.4% to 6%).[10] FYDP II focused on industrialisation and value chain development. FYDP III aimed to improve agricultural production by introducing modern crop management and enhancing storage capacity. The Big Results Now initiative in 2013 sought public/private partnerships to modernise agriculture, aiming to cultivate 350,000 ha of new commercial land and 330,000 ha of smallholder land, but faced challenges with funding and political support.[11] At this time Tanzania also participated in the continent-wide Comprehensive Africa Agriculture Development Programme (CAADP), leading to the Tanzania Agriculture and Food Security Investment Plan (TAFSIP) to achieve 6% annual agricultural GDP growth. A 2015 review identified areas of improvement for Tanzania in relation to CAADP: agriculture expenditure in Government budget was found to be lower than the CAADP target of 10%, reaching ~5% in 2014/15 and the area under irrigation was also lower than target (430k ha vs. 1 mn ha). The agricultural GDP growth rate achieved in the first part of the TAFSIP was lower than the CAADP target of 6% and average fertiliser use was also lower than target (19.3 kg/ha vs. 50 kg/ha). Conversely, there were some successes seen in tractor use, under-5 undernourishment, and food poverty.[12] Building on ASDS I, ASDS II (from 2015 to 2024) aimed to promote inclusive growth and reduce rural poverty. ASDP II (from 2018 to 2028) focuses on transforming agriculture, enhancing productivity, commercialisation, and smallholder incomes. It is currently being implemented through various flagships (AGRI-CONNECT, SAGCOT, TAIDF, and BBT-YIA).

Subsector plans such as the Livestock Masterplan (2017-21) supported ASDP II, outlining investments to improve livestock productivity and identifying key value chains for increased productivity. Fisheries Master Plan (2002-15) and National Aquaculture Development Strategy (2018-25) aimed to develop fisheries and aquaculture in an economically, socially and environmentally sustainable way.

**Among others, these developments highlighted the importance of aligning with wider economic and inter-regional commitments, prioritising value chains and technology in agricultural transformation**:

[10] Five Year Development Plan I

[11] 'Unanswered questions as BRN disbanded', *The Citizen*, 28 June 2017

[12] 'Tracking CAADP Indicators: Tanzania's Progress', Stella Masswe, et al., presented at the 4th Annual Agricultural Policy Conference, February 2018

- *Enhance sector growt*h: continue efforts to increase agricultural growth rates to achieve economic development and poverty reduction goals, aligning with the Five-Year Development Plans
- *Deepen value chains*: strengthen agricultural value chains and infrastructure to promote industrialisation, increase productivity, and support smallholder farmers
- *Modernise using technology*: focus on modern crop management systems, increased storage capacity, and technology adoption to improve competitiveness within the sector
- *Strengthen public/private partnerships*: encourage sustained engagement in public/private partnerships to enhance market-oriented measures and foster agricultural growth
- *Align with CAADP*: ensure alignment with the Comprehensive Africa Agriculture Development Programme (CAADP) to attain objectives related to wealth creation, food security, and economic prosperity

**Deep Dive: ASDP II Mid-term Review**

**The Agricultural Sector Development Programme II is a ten-year, four-component sector-wide programme to guide Tanzania's agricultural sector.** ASDP II is being implemented in two five-year phases and was intended to build on previous strategies to transform the sector. Its high-level goals are promoting sustainable practices, improving infrastructure, enhancing farmers' livelihoods, and ensuring food security. These goals are to be achieved through the programmes' key components: sustainable land use and water management, enhanced agricultural productivity and profitability, commercialisation and added value, and sector enablers/coordination/M&E. Each of these has a set of priority investment areas. Upon completion of the first of the two phases, a mid-term review was conducted to assess ASDP II's implementation. As the AMP will replace ASDP II as the sector wide strategy, it is critical to capture learnings from the MTR in the design of the AMP.

**For its mid-term review, ASDP II has been assessed based on the OECD's DAC framework along the dimensions of relevance, coherence, effectiveness, efficiency, impact, and sustainability.** Overall, ASDP II scores low to moderate across most of the criteria, confirming opportunities to build further with the new Master Plan:

- **Relevance** (rating: high): ASDP II has been found to be relevant as a framework for Tanzania's agrifood systems, and in relation to the country's multi-sectoral development approach and development vision. ASDP II could, however, be more comprehensive (e.g., it has not covered in detail topics such as nutrition, pollution, and biodiversity)
- **Coherence** (rating: moderate): ASDP II's interventions have been found to be compatible with other interventions in the agricultural sector, both national and international. These include sector Ministry plans, Dakar 2 and CAADP. However, a lack of clear funding lines and limited operationalisation means stakeholders do not have a clear understanding of ASDP II's role
- **Effectiveness** (rating: low): ASDP II has not met its 7% sector growth target and increased production levels in only 30% to 50% of priority value chains. In addition, the programme has met export targets for only 37.5% of priority value chains and import targets for only 33% of priority value chains. This is attributable to low production and productivity, COVID-19, and climate change

- **Efficiency** (rating: moderate): ASDP II has been reasonably efficient in resource allocation and usage. Fund allocation and usage have increased over the past five years. However, funding was unpredictable, inconsistent, and unevenly distributed between the four components. As a result of execution challenges, disbursement at local level was low and delayed

- **Impact** (rating: moderate): ASDP II managed to improve the livelihoods of smallholder farmers by enhancing production through investment in irrigation, dip tanks, inputs, and extension. The programme has been less impactful in enhancing food security, safety, and nutrition

- **Sustainability** (rating: low): ASDP II's efforts to scale and sustain impact on livelihoods have been limited in their success. While there is significant investment in irrigation, for example, only 1.3% of current schemes are 100% operational. Moreover, while financial investments to the sector have increased, they are still below the CAADP target of 10% of total budget. Opportunities for conservation, biodiversity, and other aspects of environmental sustainability have been grasped

**The review suggests a set of recommendations in response to the above limitations**. These recommendations are reflected in the Master Plan (see section 6F of the Annex):

- **ASDP II should move toward a more inclusive and systemic (i.e., food systems) approach** (e.g., by elevating health focus in agriculture)

- **It is necessary to streamline and enhance coherence between ASDP II, national development frameworks, and Ministerial strategies**

- **It will be critical to prioritise and deepen focus in a few catalytic areas** (e.g., irrigation, rehabilitation, mechanisation, improved seeds and livestock breeds, nutrition, post-harvest losses reduction, access to markets, and added value)

- **The success of nationwide programmes requires stronger coordination** (e.g., through a dedicated budget from the Government, sufficient human resources, close collaboration with sector Ministries, and financial contributions from development partners)

- **Ensuring adequate and predictable funding from Government, development partners, and the private sector is essential** (e.g., increasing public sector spending, increasing trust and transparency, and PPP)

- **It will be important to strengthen the relationship between farmers and the private sector** through off-taker matching

- **The enabling business environment should be enhanced** to encourage sector investment, added value, and exports (e.g., by reviewing and streamlining existing trade and marketing policies)

These valuable recommendations have been taken into consideration in the design of the AMP to build on the critical work of the past and the impact of existing documents.

The 2020s: **Focus on sustainable agriculture and sectoral development**

**In the 2020s, Tanzania has implemented strategic plans focusing on various aspects of agriculture and food systems, notably sub sectoral development and sustainability**.

Initiatives included the Fisheries Sector Masterplan (FSMP II), the Pathways for Sustainable Food Systems 2030 (PSFS), the Medium-Term Strategic Plan (MTSP), and the Agriculture Joint Sector Review (AJSR) with recommendations designed to enhance productivity, resilience, data systems, trade, business environment, and ASDP II implementation. The PSFS identified six transformative pathways for the agricultural sector, including production/productivity, financing/private sector involvement, nutrition, climate change, resilient food systems and their enablers, and R&D, with the MTSP supporting six related strategic objectives and the AJSP arriving at eight recommendations. The Government published Agenda 10/30 ('Kilimo Biashara'), targeting 10% annual growth rates in the crops sector by 2030, setting out a transformation pathway towards crops being a business-oriented sector and specifying goals related to production, investment, exports, employment, and self-sufficiency. Many of these key priorities were then brought together under the Food and Agricultural Delivery (Dakar 2) Compact to drive implementation and achieve objectives outlined in previous strategies, emphasising the importance of key value chains, investments, and young people and women becoming more involved in agribusiness.

**These latest efforts are the source of important lessons in the preparation of the Master Plan in terms of focusing on multi-sector strategies, adopting a comprehensive view of food systems and acting on recommendations from recent reviews of the sector**:

- *Develop a comprehensive food systems strategy*: advance the Pathways for Sustainable Food Systems 2030 (PSFS) strategy by focusing on transformative pathways ensuring nutritious, climate-resilient, and sustainable food systems involving multiple stakeholders

- *Focus on multi-sectoral agricultural strategies*: implement the Medium-Term Strategic Plan (MTSP) objectives relating to productivity, commercialisation, human resource capacity, sustainable land and water use, anti-corruption measures, and health interventions within the agricultural sector

- *Adopt sector review recommendations*: address the Agriculture Joint Sector Review recommendations by enhancing Government investment, improving productivity and resilience, strengthening data systems, fostering regional trade, and improving the business environment

**Key common lessons from previous strategies**

**Previous strategies should be consolidated and learned from in the current Master Plan.** In addition to the lessons from each time period, there are common cross-period lessons for the Master Plan from which to learn:

- **Emphasise market-oriented agriculture:** encouraging diversification and the adoption of market-oriented agricultural practices is essential. This entails promoting the production of diverse commodities while aligning production with market demand. Ensuring a balance between sustaining food security and meeting market needs will foster economic viability. The Master Plan should prioritise strategies that stimulate agricultural diversification and market-oriented approaches, enhancing both small holder incomes and national economic stability

- **Empower smallholders:** central to the Agriculture Master Plan's success is the empowerment of smallholders. Providing equitable access to credit, markets, and technology will be pivotal in ensuring their growth and contribution to the agricultural

sector. Prioritising support for smallholders will not only boost their livelihoods but also significantly contribute to national food security and economic development

- **Set up adequate financing mechanisms:** ensuring the initiatives have clear sources of financing is critical for timely implementation. Applying a financing lens will make sure initiatives are prioritised based on their cost/return which will lead to the highest impact for the sector. It is also important to reflect on the most appropriate type of financing for the different initiatives (e.g., P4R, project financing, basket fund…)

- **Invest in infrastructure and technology:** investing in modernising agricultural infrastructure and adopting cutting-edge technology is imperative. Upgrading irrigation systems, transportation networks, and embracing technological advancements will vastly improve productivity and market access. The Master Plan should allocate resources and efforts toward these critical areas to bolster agricultural efficiency and sustainability

- **Enhance PPPs**: the advancement of Tanzania's agricultural sector hinges upon fostering stronger partnerships between the public and private sectors. Collaborations that harness the strengths of both sectors are pivotal in driving sustainable agricultural development. The new Master Plan should emphasise the creation of robust public-private partnerships, drawing on expertise and resources to achieve shared goals, including increased productivity and market access for farmers

- **Design effective coordination mechanisms:** facilitating the coordination of the broad group of stakeholders both within and outside the Government is critical for successfully driving the transformation. This ensures stakeholders build on each others' strengths and initiatives and create synergies in approaches

- **Ensure monitoring, evaluation and adaptation**: implementing a robust system for monitoring, evaluation, and adaptation is essential for the Master Plan's success. Regular assessments will allow for the measurement of progress and identification of areas needing adjustment. An adaptive approach, based on real-time data, will ensure the Master Plan remains responsive, effective, and aligned with the changing needs of Tanzania's agricultural sector

**Drawing on these lessons, the AMP can ensure a successful agricultural transformation for Tanzania.** This transformation can help ensure that Tanzania improves upon its historical agricultural production growth to continue demonstrating best-in-region agricultural output.

## B. An enabling environment for the agricultural sector

### I. Situation and opportunities

**The enabling environment of Tanzania's agricultural transformation includes its R&D, extension services, the business environment, infrastructure, access to finance/insurance, and digitalisation.** Tanzania faces challenges across each of these elements, among the most critical being capacity for R&D, a large unmet demand for extension services, a non-conducive business environment, limited access to finance, and low levels of

digitalisation. These challenges pave the way for opportunities to transform the cross-cutting elements.

***Research and development (R&D)***

**Agricultural R&D in Tanzania, which includes the development of new practices, technologies and market-economics research, is dominated by Government research institutions. They have been effective in producing some new agricultural technologies, but critical challenges impede greater efficacy.**[13] Tanzania has one Government R&D institution within each sector (the Tanzania Agricultural Research Institute (TARI), the Tanzania Livestock Research Institute (TALIRI), and the Tanzania Fisheries Research Institute (TAFIRI)) dedicated to the development of new inputs and practices.[14] There is also one Government market intelligence unit within each sector (the latter being responsible for information dissemination, product tracing, and storage, as well as capacity building and market linkages). About 70% of all relevant full-time equivalents (FTEs) come from the Government (an equivalent proportion to that in Kenya, slightly higher than that of Uganda (60%), slightly lower than the Africa average (71.5%) and much lower than Ethiopia (88%))[15]. They collaborate with NGOs and higher learning institutions. Funding is a critical challenge faced by the Government in this space. The Tanzania Agriculture Research Institute and the Tanzania Livestock Research Institute have estimated funding gaps of $42 million and $33 million respectively.[16] In addition to funding gaps, the lack of predictability of future funds for R&D impedes the ability of each institution to plan for multi-year projects. R&D is also hampered by the limited dissemination of technology to farmers (due to inefficient links to extension officers) and limited personnel and infrastructure capacity for advanced research (e.g., genetic analysis). Market and economics research is also limited. For example, between 24% and 50% of farmers do not market their products, often due to a lack of timely market information.[17] Overall, Tanzania's agricultural R&D lags behind its peers in the region: spending in 2016 was $68.5 million PPP (2011 constant price) in Tanzania, compared respectively to 99.4, 162.1 and 222.7 in Uganda, Ethiopia and Kenya. Likewise, agricultural R&D spending as a share of agricultural GDP was only 0.17% in Tanzania, compared to 0.29%, 0.48%, and 0.62% in Ethiopia, Kenya, and Uganda, respectively. Tanzania's total number of FTEs employed in agriculture R&D is 785, below Kenya at ~1,158 and Ethiopia at ~3,025.[18]

**R&D opportunity #1: Improve research capacity to deliver the research quality required to support a modern agricultural system, using international best practices to maximise cost-effectiveness**

[13] Examples of successful agricultural technologies/practices from Government R&D institutions: improved crop varieties and soil health management technologies (TARI), and improved livestock breeding practices (TALIRI)

[14] Countries such as Kenya and Uganda have a single entity.

[15] ASTI Tanzania Recent Developments in Public Agricultural Research (IFPRI)

[16] Expert interviews with TARI and TALIRI staff

[17] World Bank blogs

[18] 'Agricultural R&D Indicators Factsheet Update: Tanzania', IFPRI, August 2018

Modernisation of research capacity can happen across both public and private sectors and could include improved coordination across both sectors to maintain a pluralistic research ecosystem. For example:

- Private sector modernisation: provide support/incentives for private sector to increase research capacity in Tanzania (e.g., subsidies for imported equipment)
- Public sector modernisation: ensure sustainable, long-term funding streams to plan for multi-year projects, update required infrastructure/equipment, and in parallel equip researchers with training to ensure effective use of latest technologies

**R&D opportunity #2: Harmonise information systems for timely dissemination of market and economic research to farmers**

Upgrade and coordinate Government and private sector information platforms to provide timely market information to farmers and encourage data-informed decision-making (e.g., what to grow and when, selling price points, etc.). Most information systems are currently siloed but could be merged into a single, central database. Dissemination of market information could then take place through multiple channels (e.g., extension agents, ICT, radio, and farmer field schools).

### Extension

**Agricultural extension – the application of scientific research and knowledge to agricultural practices through the dissemination of information, education, and training to farmers – is Government-dominated in Tanzania and constrained by financial and capacity challenges.** While the system strives to promote the use of new agriculture technologies and boost farmer productivity, only 6.9% of crop households and 9.1% of livestock households received extension services in 2019/2020.[19] Tanzania's extension officer to farmer ratio of 1:2,800 is significantly lower than the World Bank recommendation of 1:500. Currently, more than 90% of extension workers operate within the public sector, and the system is highly decentralised to local government. The limited funding available to Government (there is an estimated 65% funding gap) has forced dependence on donor-funded and private sector-funded extension.[20] Additionally, there is limited oversight of use of public funds for extension (e.g., funds allocated for extension agents can be redirected to other LGA activities). Moreover, limited liaison has led to a lack of coordination between extension services on one hand and the Ministries of Agriculture and Livestock and Fisheries on the other. There is also significant unmet demand for extension services, with a gap of around 11,000 extension workers (in addition to the current 14,800 extension workers) to achieve 1 public extension worker per village. There are limitations to the quality of extension services, stemming partly from a lack of training (e.g., the need for more refresher training and better linkages with R&D), support (e.g., limited transportation facilities, extension kits, and subsidies for networks), an officer backlog (i.e., thousands of graduate candidates are registered but not yet employed), limited incentives for agents, and limited oversight/quality control mechanisms. Partly in response to this unmet demand, digital extension services (M-Kilimo) were launched in 2019 to reach more farmers, but currently fewer than 1% of users are active.

[19] Tanzania Agri-Census Report 2019/2020

[20] Expert interviews with Director of Extension at MoA

**Extension opportunity #1: Improve quality of, and access to, extension services**

The current body of extension agents (~11,000 agents) must be increased if extension coverage is to reach all agricultural households. However, before increasing the number of extension agents, *existing* agents must be equipped with the required operational supports (e.g., motorbikes, extension kits) to execute their daily responsibilities, and feel incentivised to do their best quality work.

- **Extension quality:** Implement mandatory refresher courses for ongoing capacity building, increase availability of essential tools/equipment (e.g., motorbikes, extension kits), and implement incentives, quality checks, and/or other oversight mechanisms to check completion and outcomes of each visit.
- **Extension access:** Increase the current ratio of extension officers to farmers (1:2,800), to scale coverage of physical extension. Additionally, improve the usability/interoperability of M-Kilimo to scale digital extension coverage.

## Business environment

**Tanzania's business environment is less conducive than regional peers and has significant administrative challenges**. Tanzania's ease of doing business ranks 141st out of 190, compared to Kenya's 56 and Uganda 116.[21] Contributing to this ranking are the multiple challenges of the business environment. For one, the time to register a business in Tanzania is about 30 days vs. 21 days in Sub-Saharan Africa overall. Additionally, there are challenges in tax compliance, with 59 payments required per year, vs. 36 in SSA. Likewise, there is a challenge in complying with trading across borders – the cost to export is twice as high as the SSA average for border compliance and there is a lack of agents to perform Good Agricultural Practices (GAP) audits. Finally, the procedures and time to acquire land are also highly limiting – the majority of land is owned by villages, and it can take 2 to 3 years to transfer land to investors.

**Business environment opportunity #1: Decrease time and cost to start a business (incl. land acquisition)**

Improve coordination across all entities with current involvement in starting a business (e.g., BRELA, TRA, OSHA, NIDA), to ensure no overlap in roles, fees, nor mandates. Additionally, explore opportunities between the President's Office and villages to decrease the amount of time to transfer land from the Village Land Use Act to General Land Use, from 2-3 years to less than 6 months.

**Business environment opportunity #2: Upgrade tax record-keeping and payments system**

Improve tax record-keeping, ease of paying taxes for businesses (from ~60 to 35 annual payments) and post-tax filing requirements. Current tax record-keeping is resulting in random audits of commercial players, sometimes with demands for already-completed tax payments.

[21] World Bank Ease of Doing Business Report 2020

**Business environment opportunity #3: Reduce time and cost of cross-border trade**

Review and remove duplicity of mandates across different departments to import and export certain agriculture products (e.g., it is not uncommon for 3-4 entities to require export permits for a single consignment). Additionally, reduce the number of procedures required to meet border compliance standards, to decrease time that products are kept in air/seaports (esp. for perishable goods).

## Infrastructure

**Infrastructure relevant to agriculture in Tanzania is less developed than regional peers along several key measures.** Tanzania ranks in 9th place in Africa in terms of road quality. Market infrastructure, which consists of public abattoirs for livestock, landing sites and fish markets for fisheries and storage and cold chain facilities across the sector, are either not available (e.g., landing sites for fisheries, cold storage for horticulture and meat) or are inadequate (e.g., insufficient adherence to sanitation measures in abattoirs, absence of preferential treatment for perishable exports in seaports). When products need to be exported, Tanzania suffers from limitations in its seaports and airports. In seaports: transit times in Dar es Salaam are longer than in Mombasa, and cargo volume is limited (with 160 plugs for reefer containers, vs. >1000 in Kenya, and no preferential treatment for perishable exports). Port efficiency is also limited, with waiting times to berth of 4 to 12 days, vs. <2 days in Mombasa. In terms of airport, Tanzania has airfreight of 11KT, vs. 330KT for Kenya. Capacity is highly limited by the use of passenger planes with smaller belly space. Moreover, the average truck unloading time is 1 to 2 hours at Tanzania's Julius Nyerere and Kilimanjaro International Airports, vs. 30 min for Jomo Kenyatta International Airport in Kenya.

**Infrastructure opportunity #1: Streamline processes in current export gateways, to improve export logistics**

Overhaul export logistics to reduce wait times in existing export gateways including seaports and airports (e.g., reduce the time to load and unload cargo, time required to meet border compliance standards).

**Infrastructure opportunity #2: Expand cold storage and cold-chain networks**

Increase the capacity of cold storage and cold chains to enable scaled, quick movement of perishable products (including horticulture goods, meat, dairy, etc.). Cold-chain capacity can be increased through targeted Government investment (e.g., by region or by priority commodities), private sector innovations, and/or deployment of public-private partnership agreements.

**Infrastructure opportunity #3: Improve road and electricity networks**

Expand current rural road network and increase rural electrification. Pathways to take advantage of these opportunities include Government-led infrastructure projects, public private partnerships, community engagement and collaboration with international donors.

## Access to finance and insurance

**Tanzania's agricultural sector also faces limitations in the availability of finance, especially at the level of the smallholder farmer.** Overall, agriculture only attracts 9% of financing, even though it contributes ~30% of GDP. While there has been an increase in the share of the agricultural sector with access to finance (from 6% in 2009 to 40% in 2022), access is unequal among agribusinesses. Financial exclusion stands at 60% at the sector level and 80% for smallholder farmers. Tanzania, in fact, ends up in the middle of the South African Development Community (SADC) in terms of financial inclusion, with only 22% of Tanzania's being banked (vs. 82% in best-in-class South Africa).[22] Among the reasons for this low level of financial access are the fact that commercial banks focus on commercial farmers and that the use of credit is slow and informal. Regarding the first reason, commercial banks seldom finance smallholders due to high barriers such as the lack of collateral due to land not being titled, and the lack of finance records and contracts. At the same time, while there are Savings and Credit Cooperative Societies and microfinance groups, credit service usage is low partly due to the increasing interest rates on microfinance from commercial banks (e.g., CRDB Bank) and for insurance (e.g., 9-12%). Insurance schemes guarantee up to 80% with the trust, Private Agricultural Sector Support (PASS) and up to 50% with Tanzania Agricultural Development Bank through the Smallholder Credit Guarantee Scheme.

**In the area of financial services, there are opportunities in financial inclusion, capital access and agricultural insurance.** As productivity and profitability in the agricultural sector increase, additional funds will be naturally unlocked for smallholder farmers. In the interim, until these funds are fully unlocked, financial inclusion can be increased among smallholder, particularly women and young people, through Government-led financial inclusion efforts, digital financial services and technology, banking sector expansion and adaptation and innovative financing models. Already 75% of Tanzanians adults own a mobile phone and 72% of them use mobile money services, though these numbers are smaller in rural areas (69% own a mobile phone, with cost being a primary reason many in rural areas do not use mobile money). Moreover, there is an opportunity to leverage the proximity of even those in rural areas of financial service points (83% of them are within 5 km).[23] Several interventions (e.g., USAID's Farmer-to-Farmer Access to Finance Programme) can increase capital access for smallholders. Likewise, capital access can be increased for agribusinesses through developing PPPs to fund major agricultural projects, introducing tax incentives for agribusiness investors, establishing a dedicated agriculture investment or bank and collaborating with international donors and organisation for grants and soft loans. Finally, there is an opportunity to expand and optimise agricultural insurance coverage through pathways revolving around Government-backed insurance initiatives, private sector innovation and community-based solutions.

[22] FinScope Tanzania 2023

[23] Ibid.

**Access to finance and insurance opportunity #1: Expand digital financial services and establish innovative financing models to improve smallholder farmers' financial inclusion**

Financial inclusion can be increased among smallholder farmers through Government-led financial inclusion efforts, digital financial services and technology, banking sector expansion and adaptation and innovative financing models. Already 75% of Tanzanians adults own a mobile phone and 72% of them use mobile money services, though these numbers are smaller in rural areas (69% own a mobile phone, with cost being a primary reason many in rural areas do not use mobile money).

**Access to finance and insurance opportunity #2: Set-up required infrastructure to deploy PPPs, provide tax incentives, and establish an ag.-specific investment fund to improve capital access**

Consider different mechanisms and pathways to improve capital access, for example:

- Set-up the required infrastructure (personnel, frameworks) to deploy PPPs to fund major agricultural projects, leveraging the President's Office new PPP Unit
- Introduce tax incentives for agribusiness investors
- Establish a dedicated agriculture investment or bank and collaborating with international donors and organisation for grants and soft loans

**Access to finance and insurance opportunity #3: Improve regulations and guidelines that will enable financial institutions to design appropriate agriculture insurance products**

Expand and optimise agricultural insurance coverage by enabling the design of high-quality, affordable, and relevant products for smallholder farmers. Collaborate with financial banks, insurers, and regulators to improve guidelines and regulations for product innovation.

## Digitalisation

**Digitalisation in the context of agriculture is highly limited in Tanzania, across multiple levels and domains.** While according to the Botswana-based Centre for Coordination of Agricultural Research and Development for Southern Africa (CCARDESA) Tanzania is ranked 5$^{th}$ out of 16 South African Development Community members, in terms of digital ecosystem (and 10$^{th}$ for ICT infrastructure), the country suffers from a lack of system coordination across various platforms from different gov't entities to enable information exchange (incl. with respect to the business environment, with extension services, ICT tools in R&D, and access to finance). This limitation exists at the level of the country, within ministries, regions, districts, localities and among final users. In the business environment, there are gaps in record-keeping with respect to invoices, tax payments and timelines. Land records are kept in paper formats. With regards to R&D, there is low use of ICT tools and no harmonised standards. In relation to extension services, as stated above, while the M-Kilimo mobile platform has improved communication between officers and farmers in rural areas, less than 1% of users are active. Finally, with respect to finance, there are only a few digital initiatives (e.g., VICTORIA Finance and the PASS offering for guaranteed digital loans to smallholder farmers).

**Digitalisation: Coordinate existing digitalisation efforts with a pilot approach for 1-2 integrated services**

Coordinate existing efforts across Government and development partners to construct a single digital farmer registration database. Over time, continue to integrate additional farmer-facing services such as market intelligence, digital extension services, platforms to buy/sell products, etc.

**Summary of opportunities across the enabling environment:**

1. **R&D: Modernise research capacity to improve research quality that is required to support a modern agricultural system**, using international best practices to maximise cost-effectiveness
2. **R&D: Harmonise information systems for timely dissemination** of market and economic research to farmers
3. **Extension opportunity #1: Improve quality of and access to extension services**
4. **Business environment: Decrease time and cost to start a business** (incl. land acquisition)
5. **Business environment: Upgrade tax record-keeping and payments system**
6. **Business environment: Reduce time and cost of cross-border trade**
7. **Infrastructure: Streamline processes in current export gateways,** to improve export logistics
8. **Infrastructure: Expand cold storage and cold-chain networks**
9. **Infrastructure: Improve road and electricity networks**
10. **Access to finance and insurance: Expand digital financial services and establish innovative financing models** to improve smallholder farmers' financial inclusion
11. **Access to finance and insurance: Set-up required infrastructure to deploy PPPs, provide tax incentives, and establish an ag.-specific investment fund** to improve capital access
12. **Access to finance and insurance: Improve regulations and guidelines that will enable financial institutions to design appropriate agriculture insurance products**
13. **Digitalisation: Coordinate existing digitalisation efforts with a pilot approach for 1-2 integrated services**

## C. Crops sector

### I. Situation

**The agricultural sector plays a significant role in driving Tanzania's economy. The sector contributes 28%**[24] **to the country's GDP, accounts for 30% of all export earnings and provides 65% of the raw materials used by the industrial sector**. Additionally, it provides employment for 65% of the population, which represents approximately 7.8M households, majority of which are small-scale farmers.

**Crop production is the largest subsector and represents 64% of the total agricultural sector GDP, and accounts for 15% to the national GDP**. The subsector grew by 3.6% in 2021 and slowed to 2.7% in 2022[25]. The slowdown is attributed to high fertiliser prices and unreliable rainfall. The highest contributor to the growth of the sector has been food crops (e.g., maize, rice, pulses/beans) which have grown 7% p.a. in the last 3 years, they are typically grown across the country. Traditional cash crops on the other hand experiences a slower growth of 4% p.a. over the last 3 years, they are typically grown in Lindi, Pwani and Mwanza. Finally, the horticulture sector shrunk over the last 3 years by 3% p.a., they are typically grown in Arusha, Kilimanjaro, Iringa, Mbeya, and Tanga.

**Both food crops and traditional cash crops show signs of recovery from production slumps recorded in 2020 and 2022 respectively**. Food prices have however increased significantly between 2022-2023, with maize prices more than doubling for example. Historical food insecurity figures have remained flat at 56% between 2017 and 2020, but recent cereal consumption data show an increased consumption pattern over the last 3 years at a rate of 6% p.a., led by rice consumption which is increasing by 12% p.a.

**Exports are dominated by few crops including cashew nuts, paddy/rice, tobacco and coffee, with horticultor exports showing great promise**. Imports have been dominated by palm oil, and wheat accounting for almost 50% of the commodity import bill.

The following subsections detail the thorough diagnostics of the crops subsectors across themes including land and water, production and productivity, added value, and market access. These inform the development of the opportunity areas which are also discussed in this section across the functional and commodity lenses.

[24] Crops subsector contributes 15% to the national GDP.

[25] 2022 National Economic Survey

# Diagnostic crops

## 1 Land and water management

1a **20Mha** are currently **cultivated** of the **40Mha of arable land,** and **there is no clarity on land usage:**

- Official figures estimate **cultivated land to be 15Mha, and arable land 44Mha**
- **Spatial planning gap as only 22% of villages shave land use plans**
- National **soil and agroecological zone data is outdated**
- **46% and 34% of land** are **moderately and severely degraded**
- **61% of land in semi-arid areas is likely to be degraded**

1b Acquiring **land for ag is difficult:**

- **9% of smallholder land is titled**
- Land acquisition **takes half a month longer** to access than SSA average

1c Increasing irrigation has the potential to **increase production and resilience:**

- **2% of land is currently irrigated** out of the total 29.4Mha potential area, **+90% of which is for paddy**
- **60% traditional** and 40% improved
- **Irrigation can increase productivity +3x**
- **Decreasing precipitation trend** is seen at a **rate of 3.3% per decade**
- In 2023, **35-70% of croplands affected by drought**

## 2 Production

2a **Agricultural productivity of priority crops is 75% lower than best performing peers:**

- **Horticulture sub-sector has declined 3% p.a.**
- **Major cash crops have declined 8% p.a.**
- **Major food crops have increased 7% p.a.**

2b **40% of harvests are lost** to post harvest losses:

- **+40% post-harvest loss** estimated in **Horticulture**
- **15-20% post-harvest loss** recorded in **maize, paddy, beans and cassava**
- **341K MT storage capacity** available nationally

2c Agricultural **productivity** of priority crops is about **35% compared to best producers** and is limited due to poor utilization of agricultural inputs:

- **25% of land is cultivated by tractors** which is almost entirely for **land preparation, other activities are done manually**
- **19kg/ha of fertilizer utilized** vs **target of 50kg/ha**
- Annual **fertilizer consumption is ~600k tons, 50% of which is used for maize**
- Seed production meets **~25% of its effective demand** and **~13% of its potential demand**
- Despite newer generation seeds available, **farmers still rely on seeds which are over a decade old**
- There has been a **4x-20x increase** in the use of **CPP** in Tanzania since 2021

## 3 Value addition

3a Processing is low in the country:

- **13% of smallholder** farming households engage in any form of **agro-processing**
- **12% and 5% of paddy and maize are processed** by farming households, respectively
- **30% of sisal fiber is processed** to final product
- **10% of cashew** is processed before export
- **Only 20% of cotton** processing capacity is used, most are exported as raw lint
- **8% of horticulture** produce is **processed**

3b 25% of manufacturing companies are agro-processors

- Value addition is limited due to gaps in **supply, quality, technology, and business environment**

## 4 Market access

4a Value of agricultural exports in 2022 is **$1.2B**

- **Horticulture** exports have **grown 14% p.a.** since 2017, **cash crop** exports have **declined 6.5% p.a.**
- Limited **infrastructure** and **capacity** leading to a preference to **export though neighbors**
- **In absolute terms,** Tanzanian **exports to the EU** had the **least interceptions relative to neighbors**

4b **Smallholder farmers** are generally more successful when organized into groups, two main types include:

- **Cooperative groups** predominantly in cash crops
- **Farmer groups** predominately in horticulture

4c **Food requirement in the country is 15M tons** and is expected to reach **20M tons by 2030**

- **Maize** is the most consumed crop, **40% of total,** and **prices have +2x in the last year**
- **Cereal consumption** has **increased 6% p.a.** in the last 3 years, led by **rice at 12% p.a.**
- **Over 90% of horticultural products** produced are **consumed in country,** predominantly in fresh form
- **30% of children under 5 are malnourished,** but >50% in Njombe, Irina and Rukwa
- **40% and 80% of livestock and aquaculture feed demand is unmet**
- **Neighbours' cereal imports increasing 4% p.a.**
- **Palm oil and Wheat are largest imports**

## 1. Land and water management

### *Land Use and Planning*

1A. **Tanzania has 40 million hectares of land suitable for agriculture of which 20 million hectares is currently cropland as seen below.** Cropland constitutes of land covered with temporary crops and a bare soil (e.g., single and multiple cropping systems). The current status of arable and cropland area was derived from research conducted by a detailed geospatial tool (detail in Annex), utilising satellite imagery. For the land suitability analysis, it considered weather, soil, topography, land use, gradient, and accounted for reserved land, settlements, waterbodies and urban settlements. However, the official reported data estimates arable land to be 44 million hectares, a number which is found in reports from the early 2000s. Additionally, official reports estimate cropland to be 15 million hectares, which refers to the cumulative land used in the short rains and long rains. A difference between these approaches is that the latter relies on surveys which may not cover certain areas, compared to the utilisation of satellite imagery which can also cover/account for hard-to-reach areas. According to official figures, over the past two decades, the rate of land cultivation has seen an annual increase of 2%[26], indicating a gradual expansion of agricultural activities.

[26] Ministry of Agriculture – Performance Update 31 Oct 2023; FAOSTAT URT

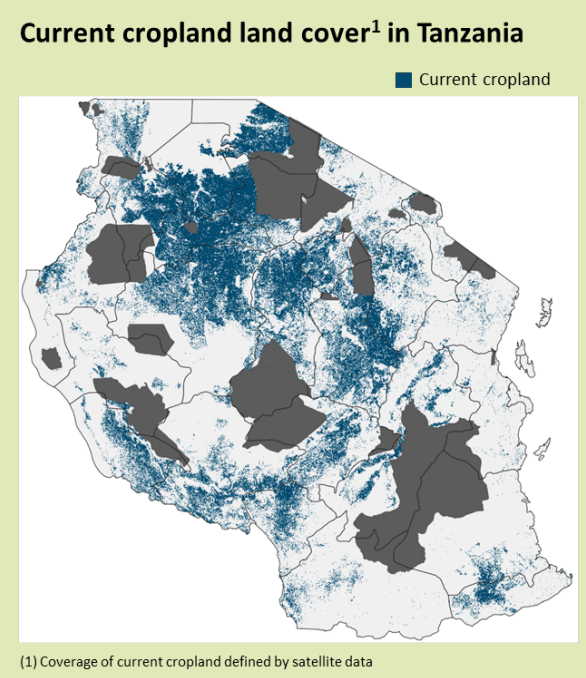



*Figure 14 Map showing the croplands in Tanzania*[27]

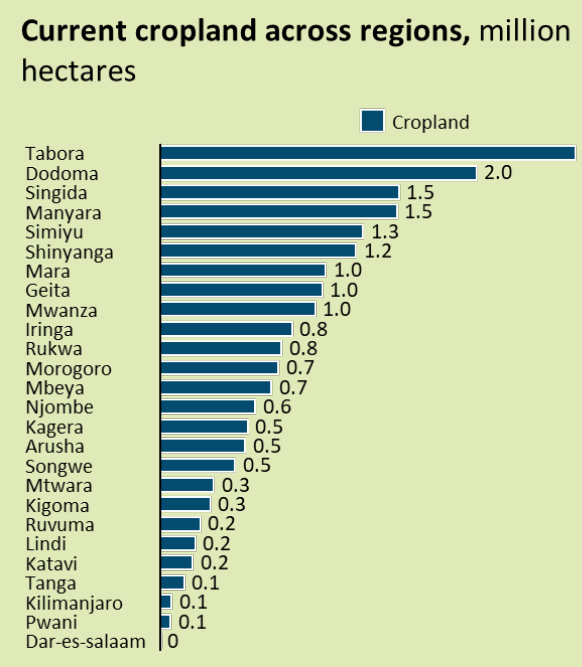



*Figure 15 Chart showing the regional breakdown of croplands in Tanzania*

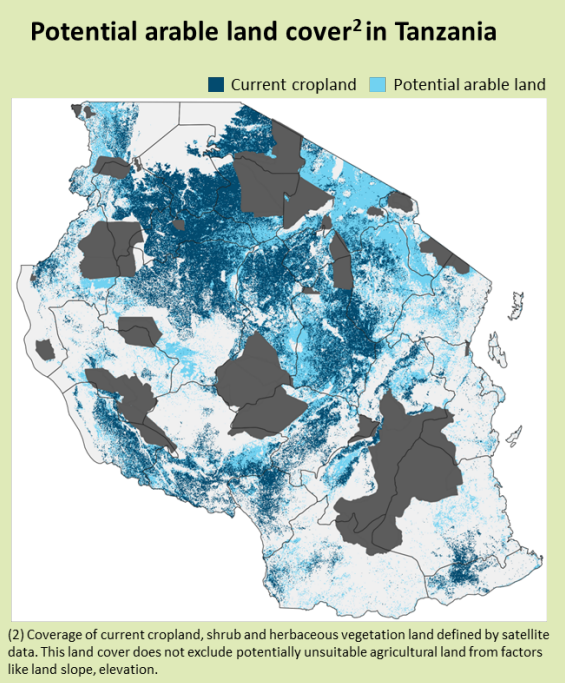



*Figure 16 Map showing potentially suitable land for agriculture in Tanzania*[28]

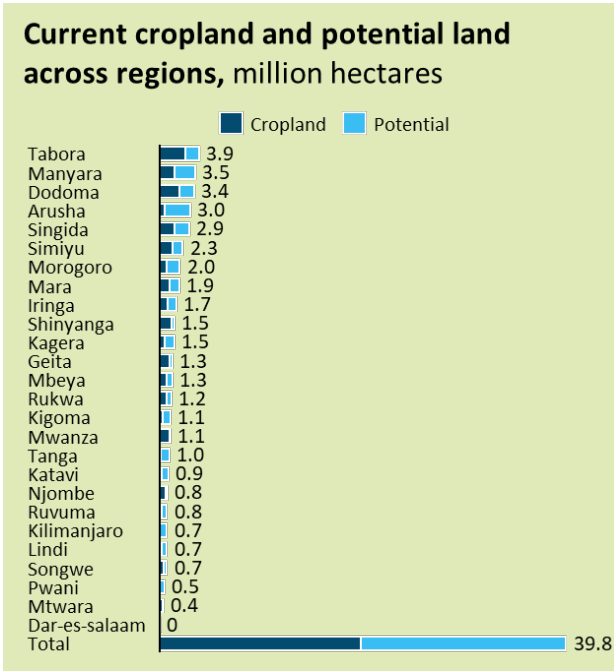



*Figure 17 Chart showing regional breakdown of current and potentially suitable land for agriculture in Tanzania.*

[27] FAO; McKinsey ACRE; National Sample Census of Agriculture 2019/20; ICRAF Landscape portal; ICPAC Geoportal

[28] FAO; McKinsey ACRE; National Sample Census of Agriculture 2019/20; ICRAF Landscape portal; ICPAC Geoportal

**A significant portion of the land available for agricultural use, roughly 75%, falls under the category of customary land as seen in Figure 18**, 90% of which have no land tenure certificates[29]Figure 18. This type of land ownership is prevalent among farming households and by implication, they are using inherited village land, and have no legal documentation to back-up its ownership, exacerbating instances for disputes, encroachment, and the inability of the farmers to use the land as guarantee to access financing. This lack of access to land titles is even stronger for women in this country.

**The land tenure situation is further constrained by the absence of a comprehensive national spatial planning policy, which creates ambiguity in land usage and management**. It also presents complexity for access to land for commercial farming or for visibility on the status of land parcels which have been allocated for commercial farming activities. The lack of clarity in land utilisation and planning poses a challenge for the sustainable development of agriculture in Tanzania.

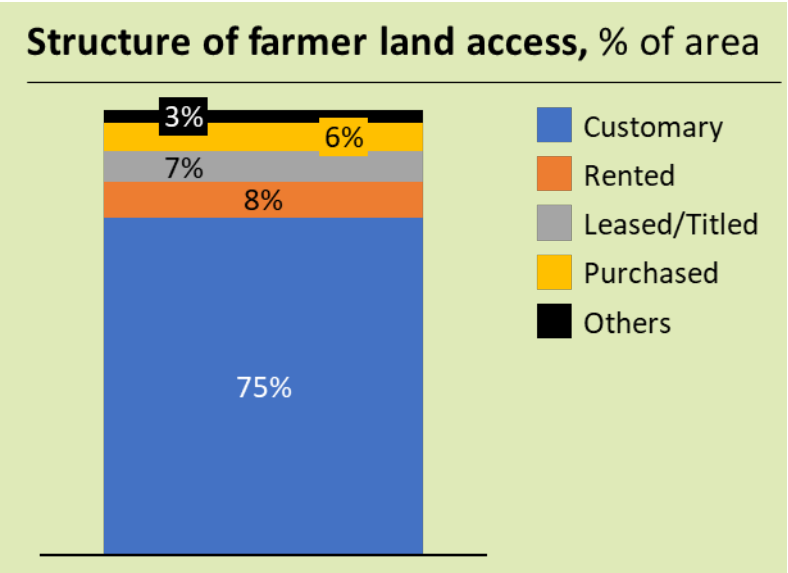



*Figure 18: Structure of total farmer land access*

### *Soil Health Status*

**Soil health is critical to ensure long term sustainable productivity of land. Often when neglected, poor soil health can be costly in terms of loss of productivity and long-term economic growth**. Studies estimate that land degrading practices on cropland leads to 34% productivity loss for rainfed maize in Tanzania for example[30]. This issue requires increased attention because 46% of land in Tanzania is moderately degraded and 34% is severely degraded, driven by factors including unsustainable agriculture, deforestation, overgrazing, etc.[31]. Degradation refers to the biophysical disturbance of land that limits its ability to perform its natural function of supporting crops, livestock development, among others. In a 2014 study, it was estimated that the annual economic value of land lost to degradation in Tanzania is in

[29] 2021 National Agricultural Census

[30] Economics of land degradation in Tanzania and Malawi

[31] National Environnemental Master plan (2022-2032)

the realms of billions of dollars annually[32]. Degradation hotspots including Dodoma, Lindi, Tabora, Singida are shown on Figure 19.

**To reverse this trend, it is important to have a system in place which regularly assesses soil health status and disseminates actionable outcomes to all stakeholders, including farmers.** This would support improving understanding of how practices affect soil health, and what practices may be required to reverse the trend and improve soil health. This is currently impeded by the fact that data on Tanzania's national soil and agroecological zones is not practical due to low resolution and is considerably outdated. For instance, existing soil maps, which are at a scale of 1:2 million, provide limited practical value as the data points are too broad, spanning resolutions of 20km x 20km. Furthermore, pedological soil data, crucial for understanding soil types and compositions has not been updated since 1984. Soil fertility and agroecological zone data, was last collected in 1993. The status of these maps/data points are hindering the ability to effective land management strategies.

**Among the prevalent soil health challenges in Tanzania are salination, affecting 3.7 million hectares of cropland, soil acidity, particularly from aluminium or manganese toxicity impacting 4.7 million hectares, and widespread soil erosion**. Additionally, sweeping - a consequence of overgrazing and overharvesting - leads to a depletion of organic matter across croplands[33]. In a more recent effort, soil organic matter and acidity levels were surveyed in 18 out of 26 regions in 2018, providing some farm-level insights. However, further comprehensive soil studies have been stalled due to a lack of funding.

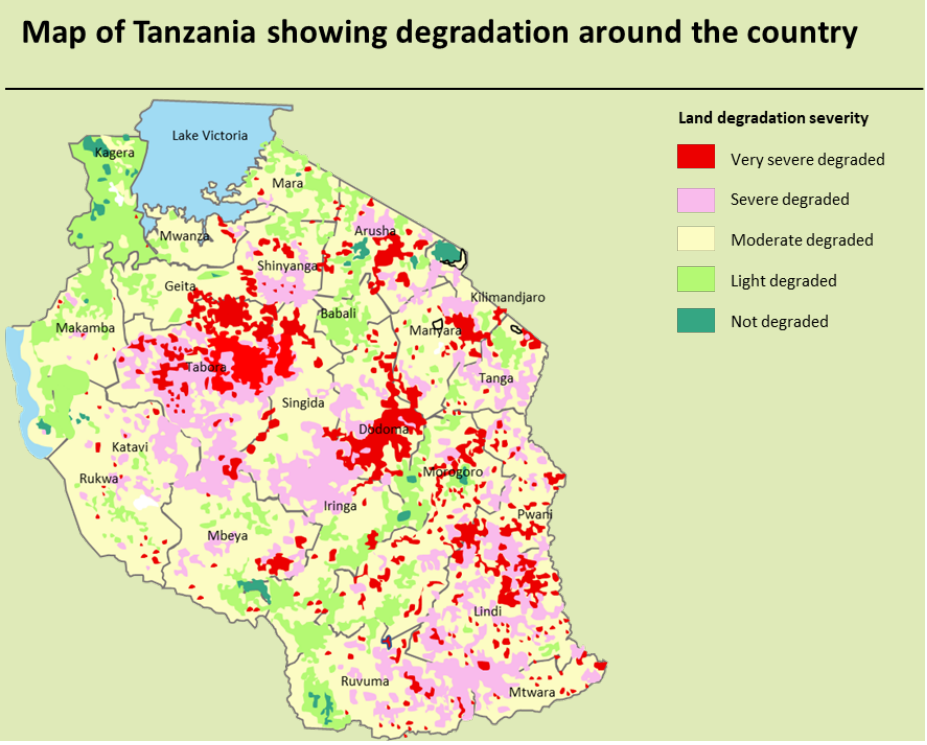



*Figure 19: Map of Tanzania showing the status of land degradation around the country.*

### *Challenges in Acquiring Land for Agriculture*

1B. **Land ownership is imperative for development of the sector as it ensures long-term investment in the land which is critical to growing the sector.** Additionally, it creates the

[32] National Environnemental Policy, 2021

[33] TARI

opportunity for smallholder farmers to access tools such as financing required to uplift their production. However, only 9% of smallholder land is titled, as seen on Figure 20. This is due to the slow pace of executing village land use plans, the complexity of the processes and the costs associated with the securing land titles/customary certificates.

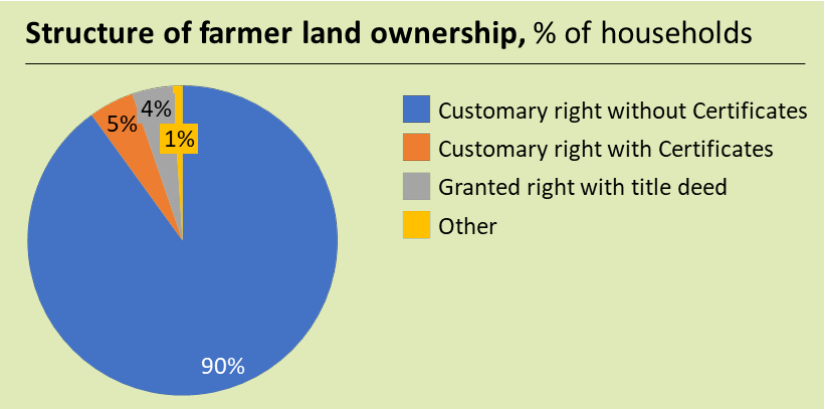



*Figure 20: Structure of farmer land ownership*

**Processing fees for acquiring land in Tanzania is 5% of property value, which is lower compared to the 7% average in SSA and 6% in Kenya as seen in Figure 21**. However, it takes 67 days in Tanzania to acquire land as opposed to 44 days in Kenya[34] as seen on Figure 22. Land tenures are typically set for periods of 33, 66, or 99 years, after which renewal is necessary. The absence of specific legislation for setting aside land parcels exclusively for agriculture has led to situations where high-potential agricultural land is repurposed for non-agricultural uses. Furthermore, 70% of Tanzania's land is classified as village land, which is not available for investment until its status is changed to general land.

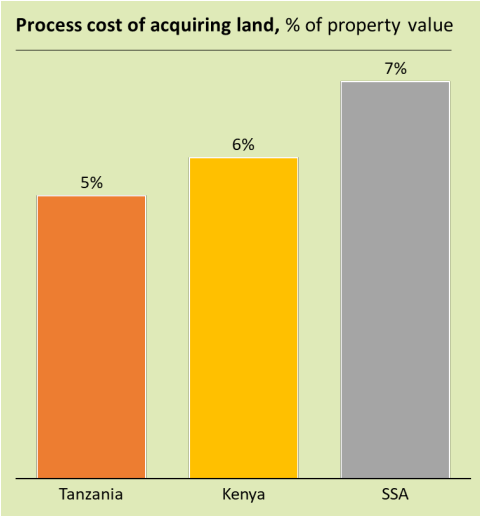



*Figure 21: Processing cost of acquiring land as a percentage of property value in Tanzania versus peers*

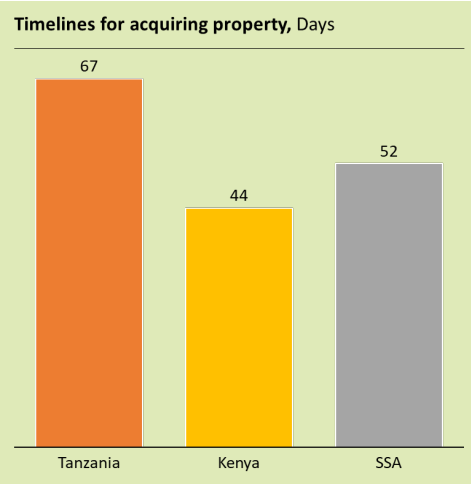



*Figure 22: Timelines for acquiring property in Tanzania versus peers*

**Crops opportunity #1: Improve access to land for commercial activities and smallholder farmers.**

[34] World Bank

Deepen efforts to make agricultural land more accessible to local and foreign investors while also supporting smallholders, especially women and young people to secure land ownership rights to increase security around land, encourage long term investments and reduce instances of conflict on land.

- Unlock commercial farmlands: Leveraging unused agricultural land, reviving abandoned farming estates, identifying out grower locations to create commercial parcels.
- Facilitate customary certificate right of occupancy (CCRO) access: Supporting stallholders with accessing CCROs and providing education on its benefits.

These can be facilitated though expanding efforts on land use planning to identify and allocate agricultural land while creating a database for agricultural land in the country.

**Crops opportunity #2: Improve soil health to reduce further degradation through climate smart agricultural practices.**

Launch campaign and efforts to drive the adoption of climate smart agricultural practices in the country.

- Degradation assessment: Assess the extent of degradation in the country, its drivers and collaboratively with local communities develop the climate smart approach to combat further degradation.
- Carbon credit aggregators: By leveraging the capabilities of carbon credit aggregators, create access to carbon markets for farmers which would serve as a strong incentive for making the transition.

***Irrigation and its Impact***

1C. **Tanzania has 2.3 million hectares deemed to have high potential for irrigation, based on availability of land, water resources and consideration of socioeconomic factors[35].** Irrigation is the application of water at a location to support crop growth at volumes in line with crop needs. It can also involve the application of water to soil to bring it to a desired moisture level before cultivation[36]. Overall, Tanzania's potential for irrigation is significant, estimated at 29.4 million hectares out of the 44 million hectares of arable land[37], with 2.3 million hectares considered as high potential. The high potential land can hence be initially prioritised for early development over other areas.

**The impact of irrigation on agricultural productivity is profound**. It has the potential to triple paddy production and more than double tomato production. The estimated yield ratio

[35] National Irrigation Masterplan

[36] National Irrigation Masterplan

[37] National Irrigation Masterplan: Irrigation potential based on a Government study assessing water resources, land resources and socioeconomic potential.

between rainfed and irrigated farming stands at 2.61[38], although this can vary depending on the crop and the adoption of good agricultural practices and proper use on input.

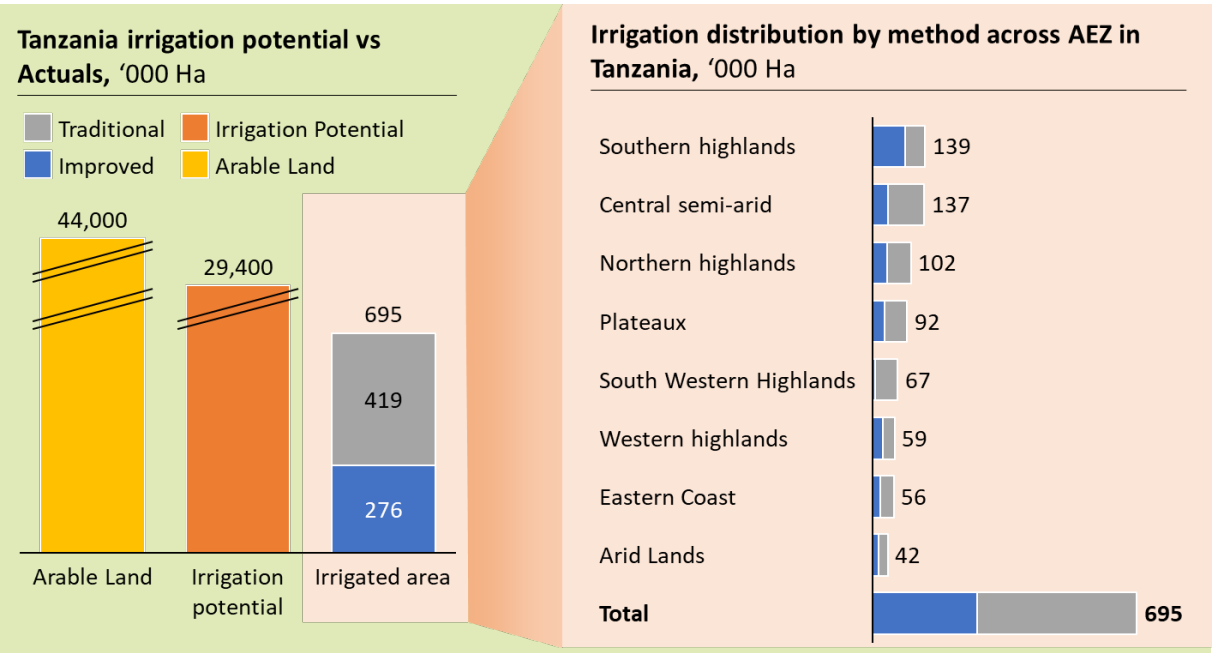



*Figure 23: Breakdown of Tanzania's irrigation potential versus its current actual distribution*

**Currently, only about 0.7 million hectares, or 2% of the land with potential for irrigation is developed, with the majority relying on traditional methods, as seen in Figure 23**. The remainder are improved systems that mostly function during rainy seasons. Irrigation in the southern highlands, primarily driven by paddy cultivation, accounts for over 90% of total Government led irrigation[39]. Between 2014 and 2019, area under irrigation remained relatively flat, growing at 1% p.a. due to limited investments in the sector as seen in Figure 24. As a result of increased investments through programmes with JICA which ran from 2017-2020, the National Irrigation Commission (NIRC) was able rebase estimates on coverage of area under irrigation as seen in the year 2020. This rebase was based on irrigation cover which came though infrastructure development, the identification or refurbishment of recorded and unrecorded schemes which had been developed by NIRC, local communities, local governments, etc.

[38] FAOSTAT

[39] Ministry of Agriculture

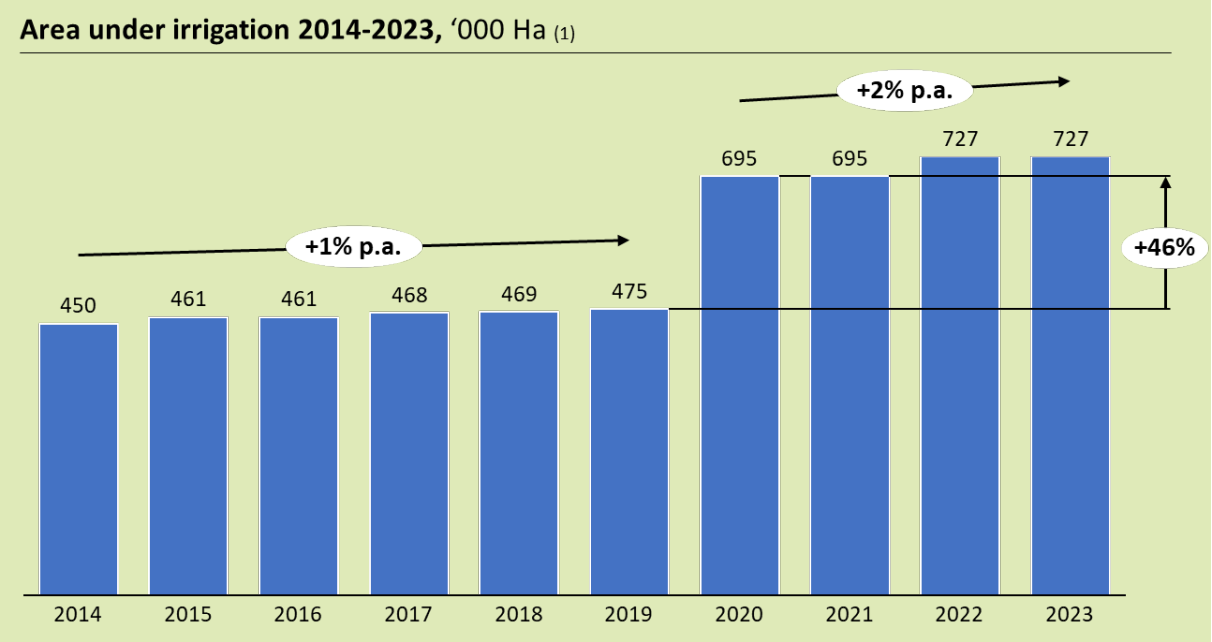



*Figure 24 Area under irrigation, 2014-2023*

### *Climate Changes and the Role of Irrigation*

**The effects of climate change are becoming more pronounced, and will impact Tanzania's agriculture particularly due to current predominance of rainfed methods.** A decrease of rainfall at a rate of 3.3%[40] per decade has been observed (1960-2006) which impacted 2023 harvests for example where 35-70% of croplands across several districts in Tanga, Arusha and Pwani regions were affected by drought[41]. This change of rain patterns is only going to be exacerbated in the future and increased heat waves and dry spells are expected. Studies estimate that a 20% variability in intra-seasonal rainfall patters could reduce yields by up to 8%[42], this highlights the importance for a wide range of climate adaptability measures, in particular irrigation. This same study projects that a 2-degree Celsius increase in temperature by 2050 could lead to 13%, 9% and 8% yield reduction in maize, sorghum and rice. It is also projected that the effects of climate change in Tanzania's agriculture by 2050 would lead to an increase in duration of heatwaves and dry spells which can lead to heat stress in crops reducing yields and productivity[43]. Crops including rice and cassava along the coast are exposed to salinisation, waterlogging and inundation due to sea level rise by an estimated 16-42cm by 2050. There is also the risk of increased frequency and intensity of rainfall which can lead to issues including crop damage, erosion, etc. Changes in rainfall patterns and temperature can affect the prevalence of pest and diseases, as these changes may make certain areas more conducive for their replication, leading to increased crop infestation.

### *Water resources in Tanzania*[44]

[40] Assessing rainfall and temperature changes /Climate vulnerability profile 2013, 2018

[41] FAO GIEWS

[42] Climate variability and crop production in Tanzania

[43] Climate vulnerability profile 2018

[44] Tanzania water resources factsheet

**It is possible to expand water usage for irrigation sustainably by 5-12 times through leveraging available resources**. It is possible to increase water usage for irrigation 5x if all other water uses (including domestic and industrial) are proportionally increased alongside irrigation use before reaching water stress. An increase of 12 times is possible if the current levels if irrigation is prioritised over other uses.[45]

**Despite irrigation accounting for 40% of Tanzania's national water demand, uneven water stress distribution across the country poses challenges, with northern regions experiencing greater scarcity**. Moreover, stressed water sources supply 70% of irrigation needs, indicating a critical need for improved water management and irrigation methods to ensure sustainable water resource utilisation. It is therefore critical to prioritise the extension of irrigation in regions without water stress and with the capacity to further increase water usage. The Rufiji basin, with the highest per capita renewable water resource, leads among various catchments, including Lake Nyasa and Lake Rukwa, to contribute to an average national water resource of 2,250 cubic metres per year as seen in Figure 25.

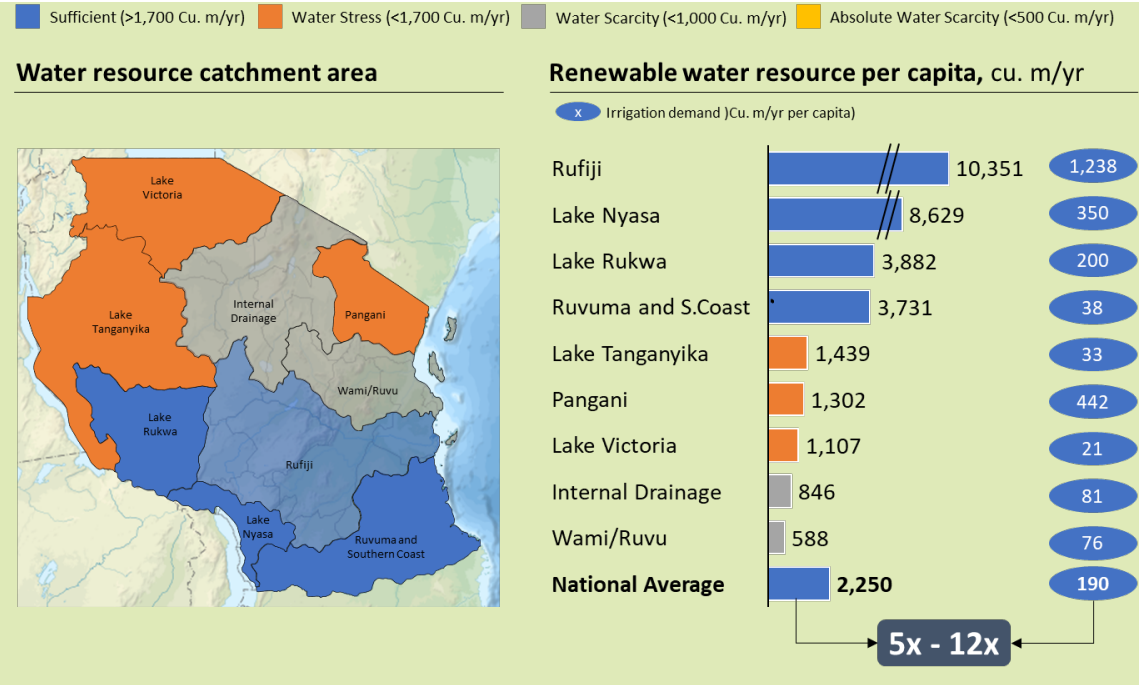



*Figure 25: Water resources in Tanzania*

**Crops opportunity #3: Increase area under irrigation to improve productivity and build resilience.**

Expand are under irrigation to support farmers with increasing productivity of their lands and building resilience in the face of changing precipitation patterns to ensure food security

- Government led irrigation: Investments in large, medium, small irrigation schemes and the establishment of borehole facilities in the country to ensure water access and to utilise the breadth of water resources available.
- Private sector led irrigation: Establish a public-private-partnership framework to encourage private sector investment.

[45] Based on the Falkenmark water stress indicator

- Creation of Irrigators organisation: Empowered organisations to run and maintain irrigation schemes in their localities across the country.

**2. Production and productivity**

2A. **In 2022, the production of the priority crops identified in the AMP as seen in** Figure 26 **was 24.5 million tonnes, valued at US$ 6 billion**. Rice, maize, and cassava dominate Tanzania's crop production. Productivity of these priority crops is however still low, estimated to be at 35% of productivity achieved by top world performers.[46] Despite being one of the top producers of crops such as cashew nuts and beans in Africa, productivity is 11% and 18% of the top performers in Africa.[47] The country's favourable agroecological conditions also present opportunities to enhance the production of crops like avocados, sunflowers, coffee, and wheat.

[46] Agenda 10-30

[47] FAOSTAT

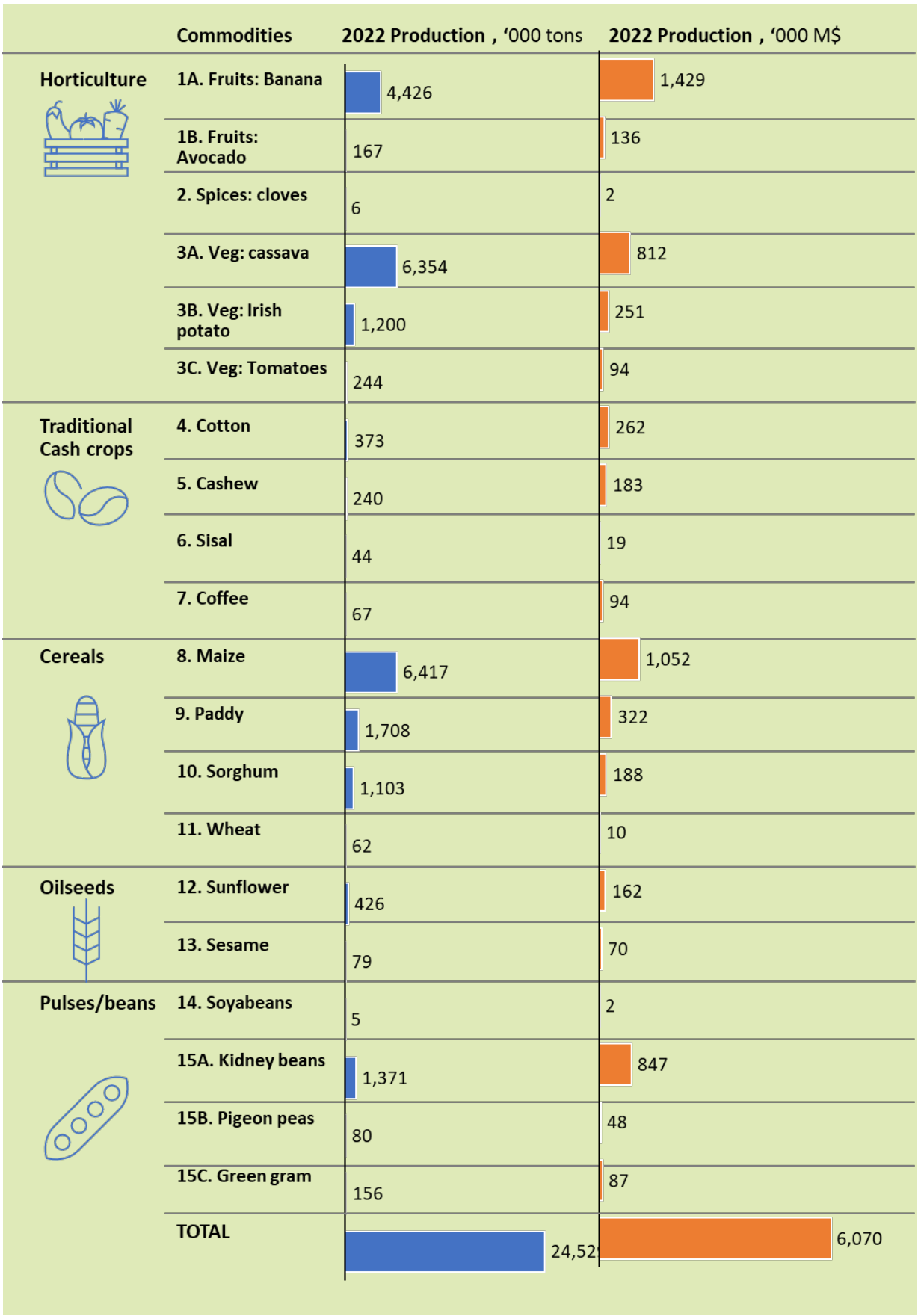



*Figure 26: 2022 priority crops production*[48]

### *Major food crops*

**Increase in the production of major food crops, such as maize, has been driven by an increase in harvested area in the last decade as seen in** Figure 27**.** Production volumes of the major food crops have grown at an average rate of 6.6% per annum over the last three years, as seen in Figure 28.[49] Beans are a particularly strong crop for Tanzania, with the country being the largest producer in Africa, representing about 18% of the continent's production. Maize has seen a growth of 7% per annum, whereas paddy production has experienced a 7% annual decline. The drop in production during 2021/2022, attributed to high fertiliser prices and unreliable rainfall, prompted Government interventions such as fertiliser subsidies and the expansion of irrigation.[50] Productivity remains low across major food crops, Figure 29 highlights a snapshot of yields of select food crops where it can be seen that Tanzania lags behind top EAC and Africa performers in terms of yields for maize, paddy and beans.

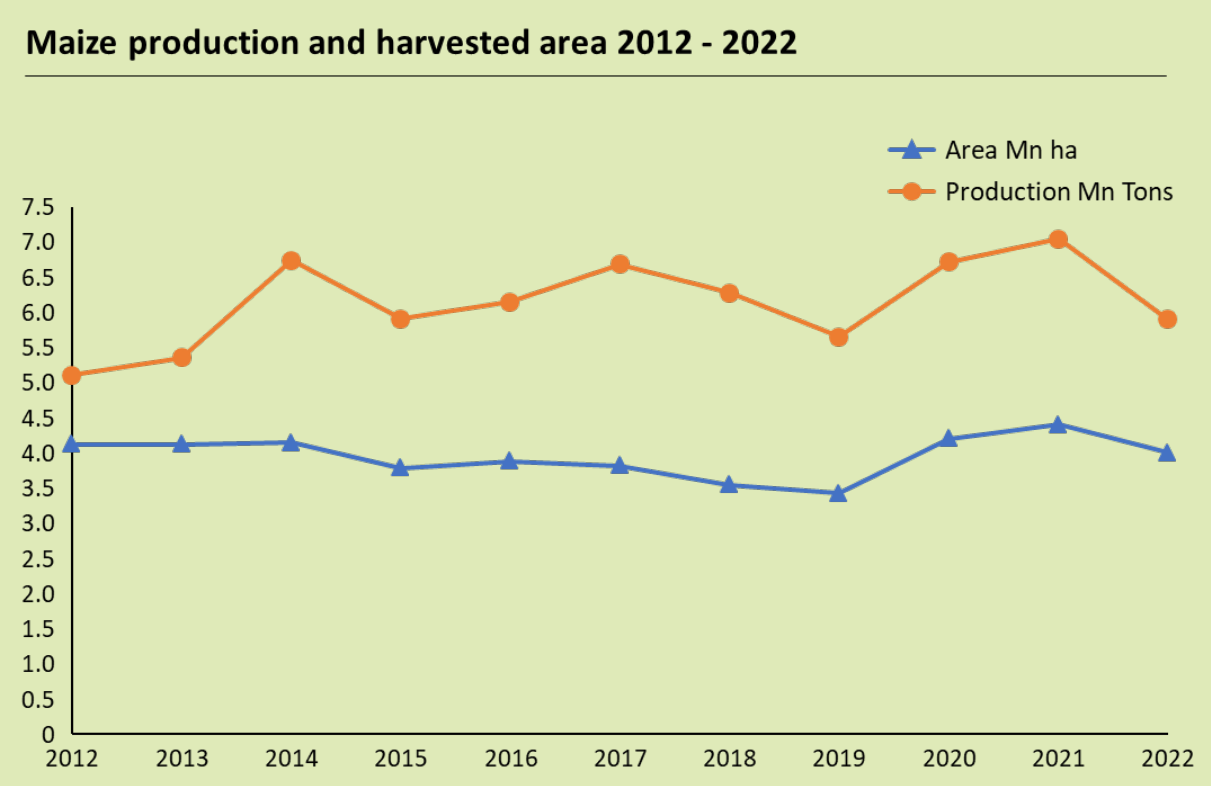



*Figure 27 Maize production and harvested area 2012 - 2022.*

[48] Agenda 10-30

[49] Ministry of Agriculture – Performance Update 31 October 2023

[50] Ministry of Agriculture

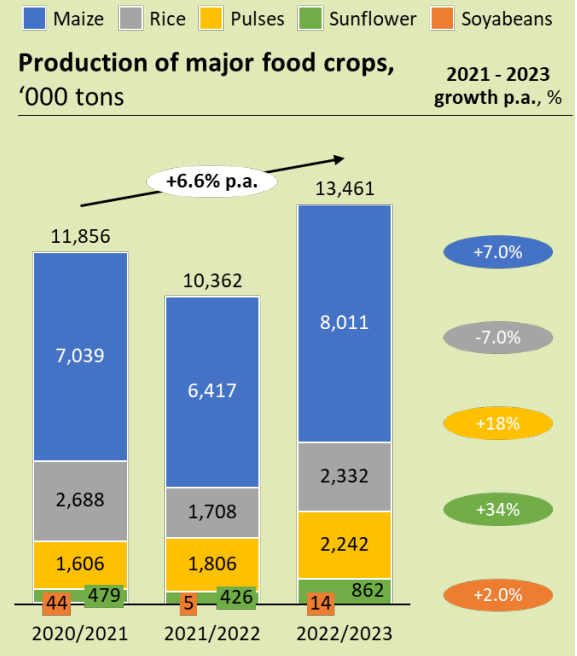



*Figure 28: Production of major food crops 2021-2023*

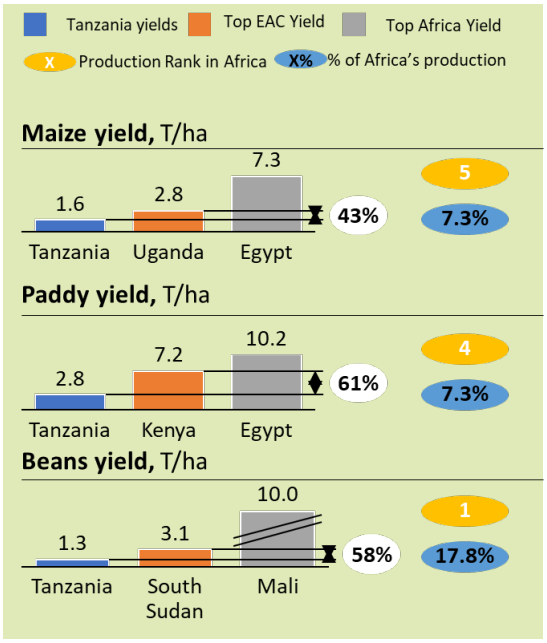



*Figure 29: Yield of select food crops in Tanzania, EAC and Africa*

### *Traditional cash crops*

**Traditional cash crops have faced an average annual negative growth rate of 8.2% from 2019-2023 as seen in** Figure 30**.** [51] A sharp decline of 35% was observed between 2020 and 2021 due to a decrease in export volume of coffee and cotton, as well as a decrease in both volume and world market price of sisal. Since 2021 there has been a slight recovery with a 4% annual increase, led by cotton and coffee, where cotton has witnessed the fastest growth rate at approximately 19% per annum. Conversely, cashew nut production has seen a steady decline of 5% per annum over the last three years, mainly driven by climate changes and challenges in application of crop protection.[52] Productivity remains low across major traditional cash crops, Figure 31 highlights a snapshot of yields of select traditional cash crops where it's seen that Tanzania lags behind top EAC and Africa with the widest gap seen in Coffee.

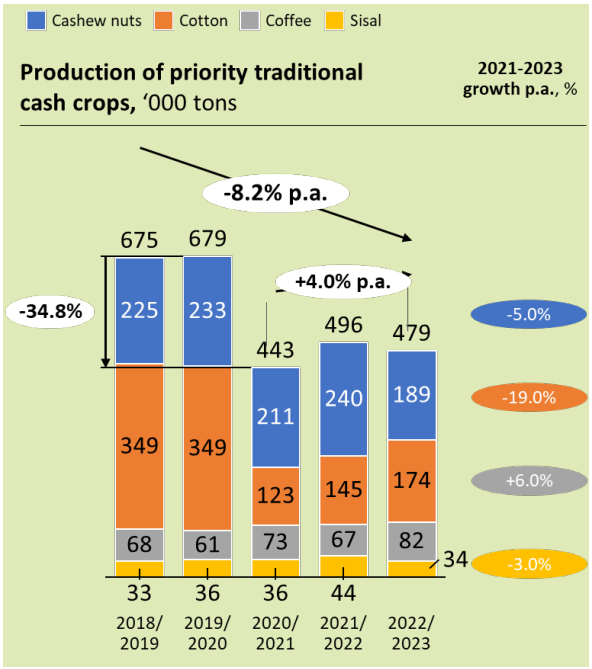



*Figure 30: Production of priority traditional cash crops 2019-2023*

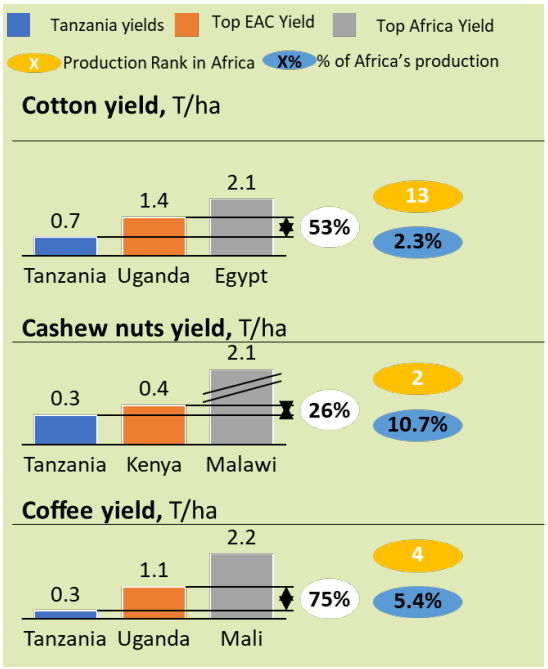



*Figure 31: Yield of select traditional cash crops in Tanzania, EAC and Africa*

### *Horticulture*

**Despite overall growth in agriculture, the horticulture subsector has experienced a decline of 3.0% per annum over the last three years**, primarily in vegetable production, which has plummeted by 38% annually as seen in Figure 32. The decline in vegetable production has resulted in reducing its share in total horticulture production from 30% in 2021 to 11% in 2023.[53] This decline can be attributed to the prolonged droughts, limited input availability and unreliable markets. Nonetheless, Tanzania stands as Africa's second-largest producer of cloves.[54] The horticulture sector sees substantially higher margins, for instance,

[51] Cotton, cashew nuts, cotton, sisal, tobacco, pyrethrum, tea, sugar cane

[52] Ministry of Agriculture – Performance Update 31 Oct 2023

[53] Ministry of Agriculture – Performance Update 31 Oct 2023

[54] FAOSTAT

tomatoes yield a +60% margin compared to rice at 24%.[55,56] However, horticultural productivity is low, with top yields in the East African Community (EAC) surpassing Tanzania's by up to 57% in the case of bananas for example[57], as seen in Figure 33.

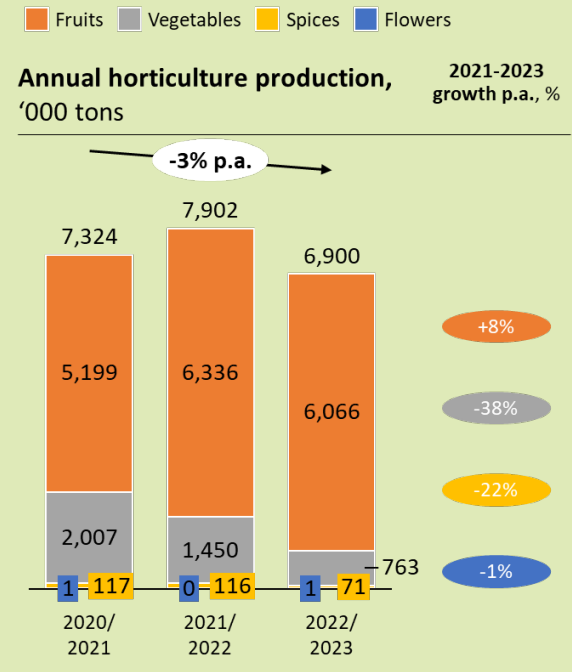



*Figure 32: Production of horticulture crops 2021-2023*

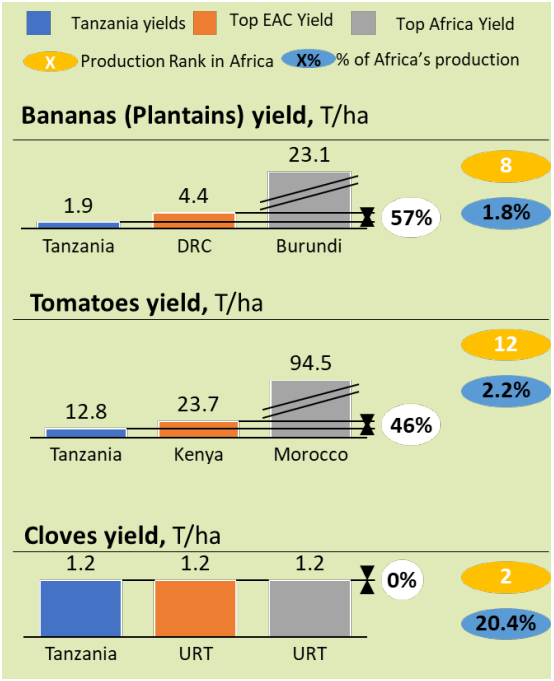



*Figure 33: Yield of select horticulture crops in Tanzania, EAC and Africa*

### *Post-harvest losses*

2B. **Post-harvest losses are significant, with up to 40% of average harvests lost across all crops.**[58] Specific losses are 15-20% in maize, paddy, beans, and cassava, as seen in Figure 34, and over 40% in the horticulture sector.[59] As highlighted in Figure 35, losses typically occur during drying, storage, processing, and transportation, with insects and pests being perceived as the main causes.[60] Losses in horticulture are driven by several factors including the limited availability of cold chain, the fact that priority is not given to horticulture products during transit despite their high level of perishability. For example, 20-50% of tomato harvests are lost; 20-80% of banana harvests are lost, and 13-32% of fruits and vegetable harvests are lost. 20-40% of tomatoes in Northern Tanzania are lost due to pre-harvest losses, which can be higher at the onset of diseases such as tuta absoluta where losses reached 50% during the outbreak in 2019.

[55] Market options for smallholder horticulture growers

[56] Smallholder rice farmers profitability

[57] FAOSTAT

[58] East Africa Post-Harvest loss strategy and action plan for fruits and vegetables

[59] National Post Harvest Loss Strategy 2019-2029

[60] National Horticulture Masterplan

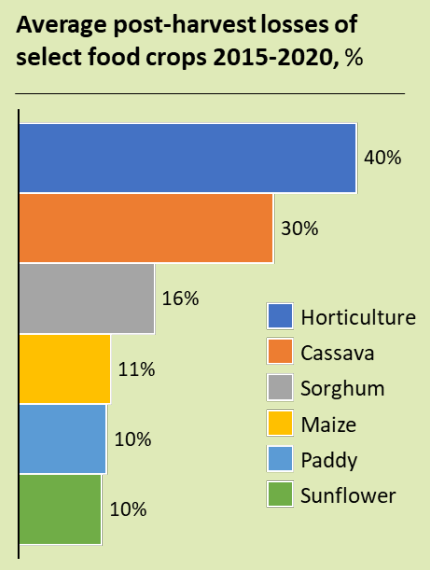



*Figure 34: Average post-harvest loss of select food crops, 2015-2020*

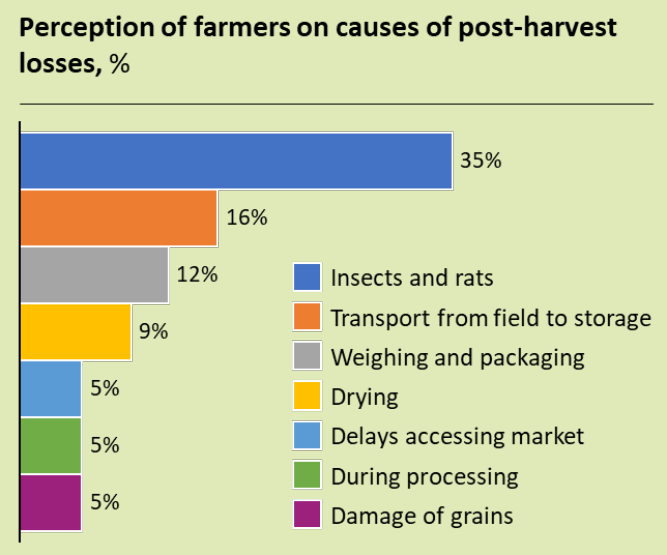



*Figure 35: Perception of farmers on the causes of post-harvest losses*

### *Crop boards*

To support the development of key commodities, the Ministry of Agriculture (MoA) oversees specialized crop boards dedicated to spearheading policy initiatives, goals, and comprehensive strategies for designated crops. These boards are pivotal in executing policies, ensuring robust production and marketability, managing stakeholder relations, and structuring markets within their scope. Their efforts are instrumental in supporting the MoA's objectives to amplify: (i) Production efficiency and yield, (ii) Employment prospects, with a focus on increasing involvement among women and youth, (iii) Resilience in food and nutritional security, (iv) Market access, agricultural financing, and export opportunities and (v) The development of cooperatives. While crop boards have significantly contributed to the advancement of their respective crops, it is critical to continue to optimize their operations and mandates to eliminate redundant activities and enhance efficiency.

Historically, the boards have been structured around the traditional cash crops such as cashew and coffee. A recent development in the board landscape of the country however is the establishment of the Cereals, Oilseeds, and Produce Regulatory Authority (COPRA). This marks a significant milestone in extending oversight to crops which were previously without dedicated board support. COPRA is currently being set-up and its mandate and role clarified with key stakeholders.

Highlighted achievements of crop boards include:

- The Cashew Board managed the procurement and distribution of 49,000 metric tons of sulfur and 3 million litters of pesticides, aiming for a production target of 400,000 tons for the 2023/24 season.

- The Coffee Board distributed 3 million Robusta seedlings at no cost to farmers in the Kagera region in 2022 to enhance production.

- The Cotton Board facilitated the availability of 25,000 metric tons of high-yield UKM08 variety seeds across the nation's 17 cotton-growing regions through seed multiplication efforts.

- The Sisal Board took over 20,000 hectares of unused sisal farms for revitalization and redistribution to smallholders, targeting a production goal of 120,000 metric tons by 2025.

- The Sugar Board is working towards the creation of 24,000 direct and 180,000 indirect jobs in sugar plantations to advance the country's self-reliance in sugar production.

- The Tea Board championed the launch of a digital/online tea auction system to reduce costs, enhance transparency, and position Tanzania as a regional trading hub.

- The Tobacco Board has revitalized the industry, with production soaring to 120,000 metric tons in 2023 from 60,000 metric tons in 2022, correcting years of fluctuating outputs.

**Crops opportunity #4: Increase production and sale/exports of major food and cash crops though improved board execution.**

Developing food and cash crops though coordinated efforts led by crop boards

- Cash crops: Boards support for quality extension, access to high quality inputs, ensuring appropriate pest control, added value and access to export markets.
- Food crops: Board to support improving quality, market access, efficacy of contract farming, etc.

***National Food Reserve***

**The National Food Reserve Agency (NFRA) has a storage capacity of 340,000 metric tonnes (MT)**[61]. As seen in Figure 36, the NFRA has a network of storage facilities in the country with the largest being in Sumbawanga, with a capacity of 89,000MT. The NFRA would at any point hold upwards of 150,000MTof grains as that is enough to feed the country for 6 months in the event of a disaster. To plan purchases/sales for the season, the NFRA leverages the early warning systems in the Ministry of Agriculture to support with the determination of purchases/sales for the season. In 2023, the reserve included 202,000MT of maize and 6,700MT of rice. The NFRA purchases directly from smallholder farmers through buying points located in high producing areas including Iringa, Njombe, Sumbawanga, etc. The NFRA also has contracts with farmer cooperative and traders to also facilitate purchases. There are plans to expand storage capacities to include other crops like sunflower, wheat, and beans. The NFRA intends to become the largest food reserve agency in the EAC and SADC regions with capacity larger than Zambia's 1.1Mn tonnes and South Africa's 2Mn tonnes aiming for a capacity of 3Mn tonnes to enable Tanzania to also meet broader regional demand.

[61] NFRA

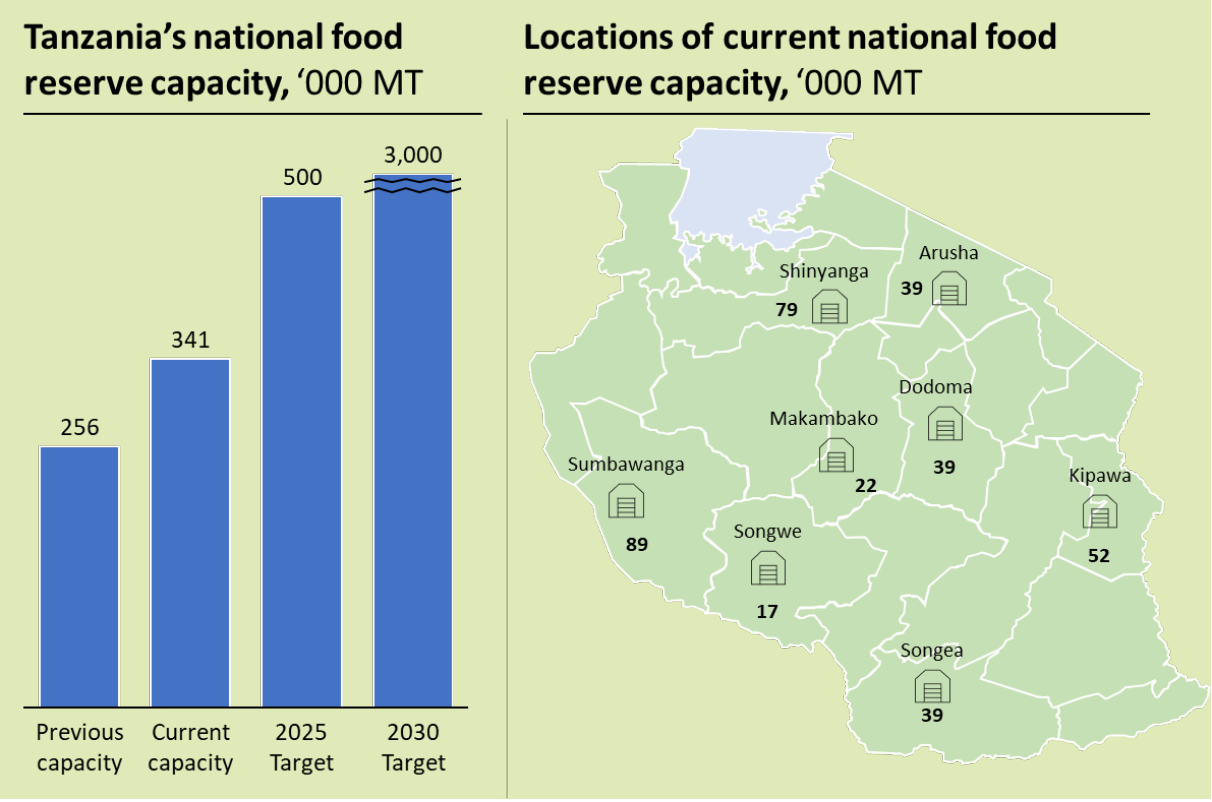



*Figure 36: Tanzania NFRA capacity and network*

### *Mechanisation*

2C. **Currently, 25% of land is cultivated using tractors, predominantly for land preparation**, with most other farm activities conducted manually, as seen in Figure 38. This limits productivity as farmers are unable to complete farming activities such as planting in time as rains commence, thereby increasing risk of crop failures. They are also unable to practice intensification which in turn optimises the use of land for agricultural activities. Tractor numbers have increased by 8% per annum over the last six years, driven by the private sector, as seen in Figure 37, but this is still behind the goal of reducing manual cultivation to 10% by 2030[62].

[62] Ministry of Agriculture

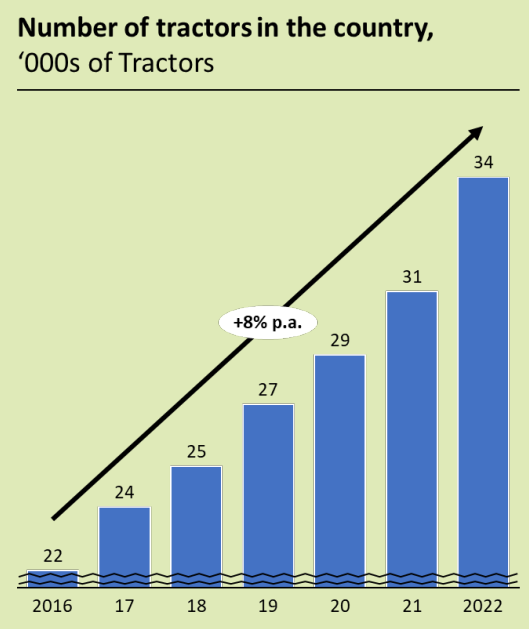



*Figure 37: Evolution of number of tractors in Tanzania*

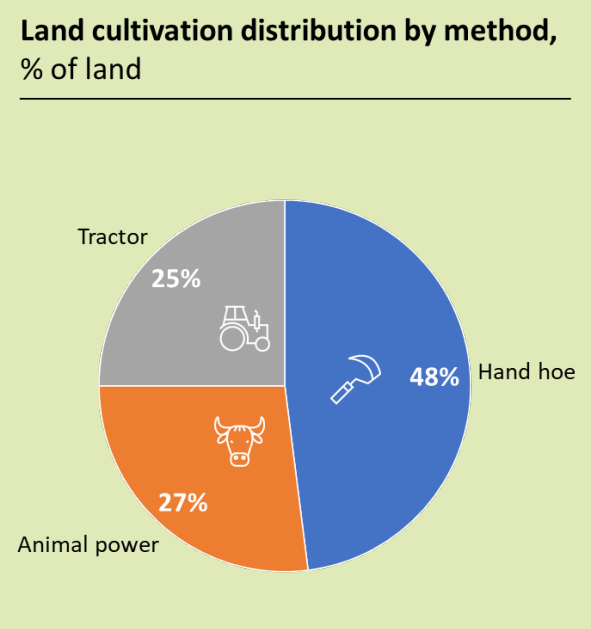



*Figure 38: Land cultivation distribution by method*

**The Government has undertaken certain efforts to promote mechanisation in the country including providing tax exemption for the importation of farm machinery, spare parts, public financing from funds like the Agricultural Inputs Trust Fund (AGITF).** In 2022, the AGITF disbursed 56 loans valued at over $0.8M which was a 21% increase over its disbursement in 2021 for mechanisation implements including tractors and tillers[63]. It should be noted that the level of mechanisation is different across regions, and tractors move around the country depending on the season. Additionally, not all tractors in the country are used for agricultural activities, some are for example used for other activities including the transportation of waste in big cities. Overall. It is estimated that the level of mechanisation is very low and tractor density is less than 0.1hp/ha which is below the FAO recommendation. The Government is in the process of reviewing the National Mechanisation strategy during which it would conduct an assessment to understand the current situation of mechanisation in the country, and set-up strategies plans towards 2030 and 2050 to improve mechanisation.

***Fertiliser Use***

**Tanzania's fertiliser use is low at 19kg/ha[64], which below the sub-Saharan average of 22kg/ha[65] and well below world average of 146kg/ha as seen in Figure 39**. However, there has been an improvement from 1kg/ha in the early 2000s to 19kg/ha in 2023. Proper fertiliser use in combination with good agricultural practices could potentially sextuple yields in some cases[66] as seen in Figure 40.

[63] MFUKO WA PEMBEJEO - TAARIFA KWA AJILI YA MAANDALIZI YA KITABU CHA HALI YA UCHUMI 2022

[64] Ministry of Agriculture – Performance Update 31 Oct 2023

[65] World Bank

[66] CGIAR;

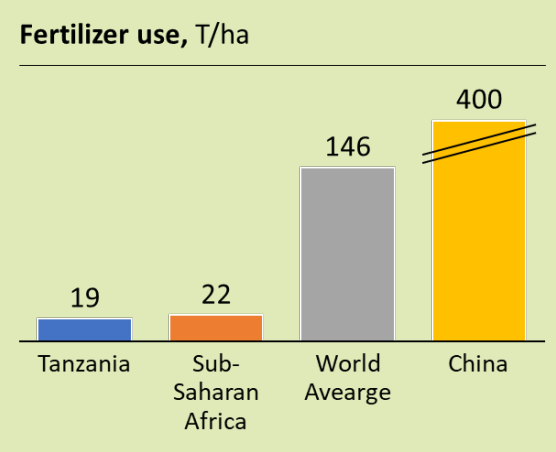



Figure 39: Fertiliser usage across the world

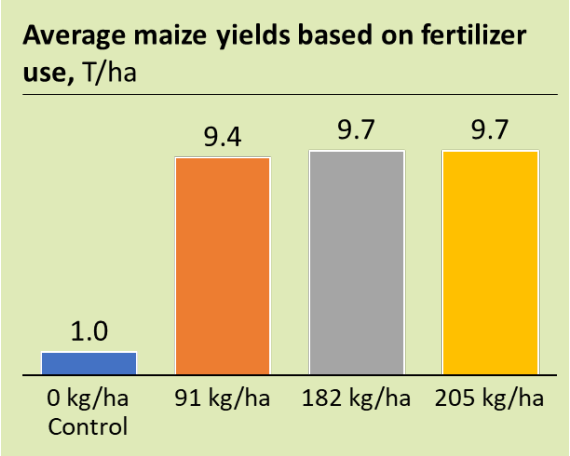



Figure 40: Results of CGIAR fertiliser demonstration experiment on Maize in Iringa, Tanzania

**As seen in Figure 41, fertiliser consumption in Tanzania increased year-on-year between 2015 and 2018 at a rate of 21% p.a**. In 2019, consumption declined by 41%, but recovered in 2020, crossing the 500,000MT mark for the first time. Consumption again declined in 2021, and recovered close to 600,000MT in 2022. The decline in consumption levels are driven by high fertiliser prices in the global market, and the recovery is driven by the re-introduction of the fertiliser subsidy.

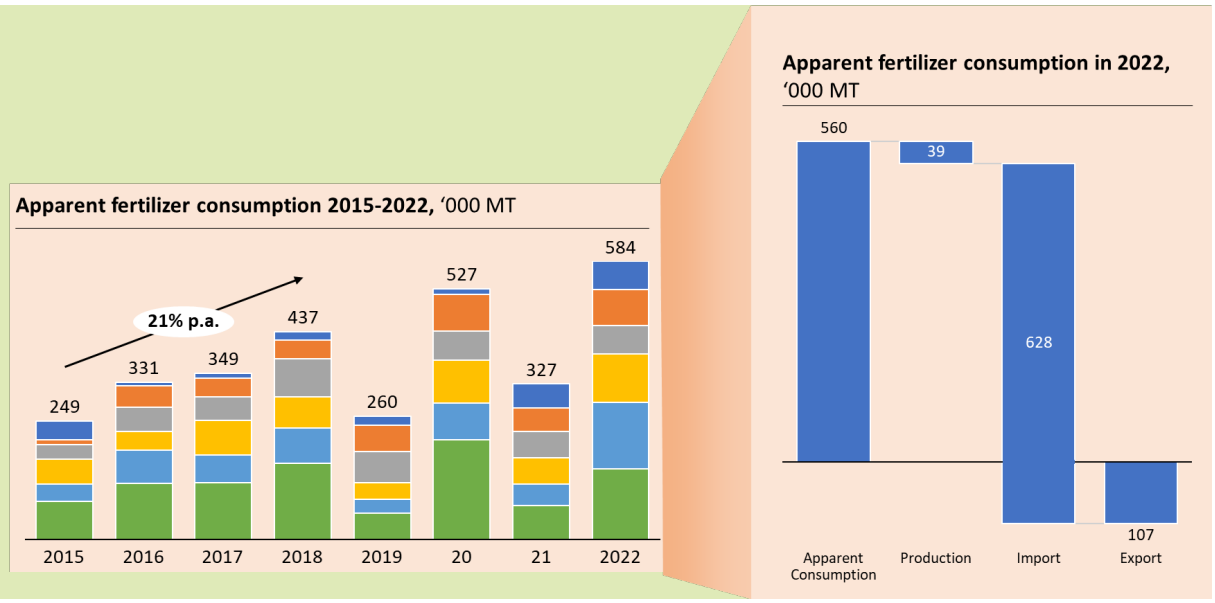
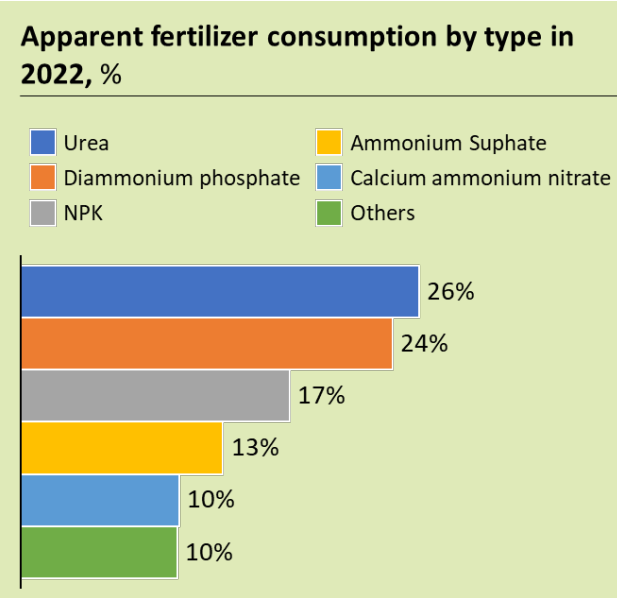



*Figure 41 Apparent fertiliser consumption, 2015-2022*[67]

**Urea, Diammonium phosphate, NPK and ammonium sulphate make up 80% of fertiliser used in Tanzania as seen in Figure 42**. This is driven primarily by the cultivation of crops such as maize, which is cultivated on 4Mha, and uses +50% of fertilisers in the country, as seen in Figure 43. Additionally, NPK, specifically NPK blend 10-18-24, is mostly used by tobacco farmers. As a result of the high fertiliser prices in recent years, many farmers turned to the use of Agri-lime and gypsum to improve their soil health and optimise the use of fertilisers on their fields. This suggests that some farmers are becoming more aware of the impact of

[67] International Fertilizer Development Centre (IFDC): Africafertilzer.org

mineral fertilisers on their soils, and some of the inputs required in addition to improve soil health.



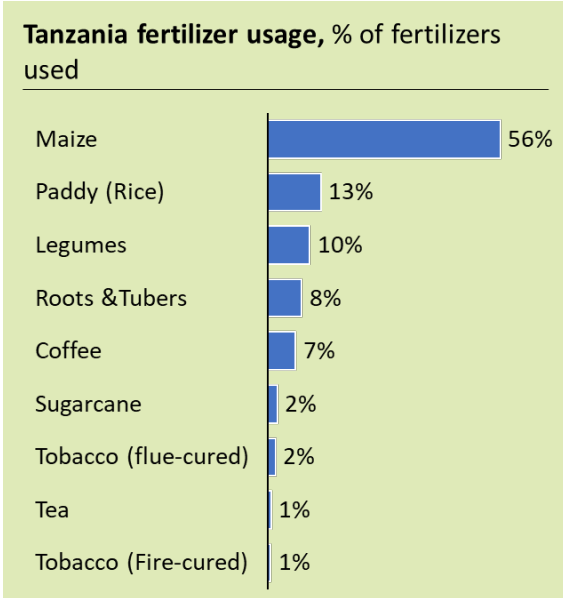




*Figure 42 Apparent fertiliser consumption by type in 2022*

*Figure 43 Tanzania fertiliser usage*[68]

Tanzania has been unable to meet demand for fertilizers. In Figure 44, it is seen that despite sufficient availability in the country, fertiliser utilisation is below the estimated demand by up to 14%. The high prices of fertilisers at the point of consumption have been identified as a major contributor to unmet demand gap[69].

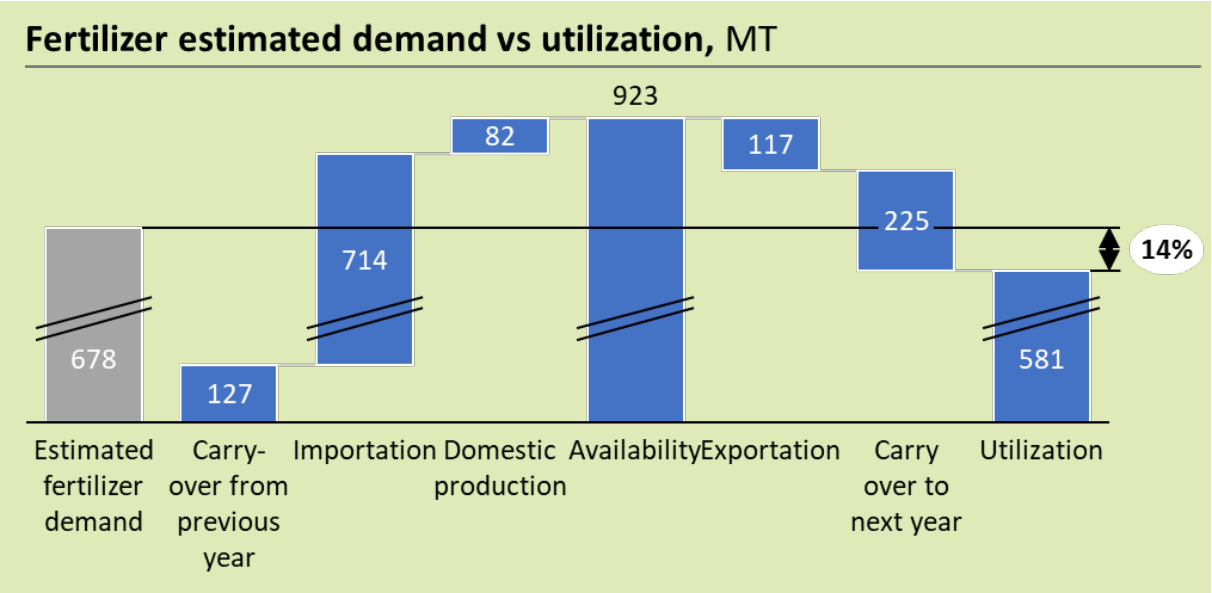



*Figure 44 Fertiliser estimated demand vs consumption.*

**The Government has explored 5 models to drive fertiliser usage up since 2009 as seen in Figure 45 and has recently rolled out the National Agricultural Input Voucher System**

[68] Fertilizer sector development strategy (2023-2030)

[69] Ministry of Agriculture; AMP working group

(NAIVS) a digital platform through which registered farmers access fertiliser subsidies. The Government covers 49%-58% of the market price, depending on the fertiliser while the farmers cover the balance. All private sector players, including agro-dealers are not allowed to sell fertilisers outside the subsidy programme.

| Intervention/model | Description | Reach | Challenges | Current model |
|---|---|---|---|---|
| **Subsidy Voucher Model** | Launched in 2009 and modelled after the coupon model in Malawi. **Eligible farmers approved at the village level were given vouchers** which enabled them access fertilizers from agro-dealers at a **50% discount** | **2.5m farmers reached** across 2009 - 2014, 2015 - 2016 | Instances of vouchers being claimed for **subsidy payment without fertilizers being delivered**. Instances of farmers selling **vouchers for cash** | |
| **Fertilizer Credit Model I,** Commercial bank led | Commercial banks provide credit to farmers where interest payment is **split 3% and 4% (totaling 7%)** between the farmer and the government | The government had to **pivot to the agro-dealer led model** | Limited reach due to the need for **collateral** by banks, requirement for farmers to make **80% downpayment** for credit | |
| **Fertilizer Credit Model II,** Agro-dealer led | Agro-dealers provide credit to farmers to access fertilizers, and the **government pays 20%** of the cost while the farmer covers the balance | **900 farmers reached** in 2014/2015 | **Challenges validating actual sales** from agro-dealers to farmers before subsidy payments are made | |
| **Direct Import and Delivery Model via TFC** | TFC, imports fertilizer directly, and sells directly to eligible farmers approved at the village level through **its 18 distribution points** across the country. Farmers access the fertilizers here at a **50% discount** | TBC | Farmers struggled to access the fertilizer through TFC due to its **limited reach/outlets**. For many farmers, the cost of transportation would eliminate the value of the discount | |
| **Digital-led Model** | **3m farmers are currently registered** on the subsidy platform **with unique IDs** where data including land size, crops grown, etc. are recorded. These data points are used to set the limit and type of fertilizers the farmers can access all-year-round at a 40% discount | **0.84m farmers reached** in 2022/2023 | **Digital glitches** which include multiple sale of the same bag of fertilizer, sale of fertilizer above the prescribed limit to a single farmer, etc. | |

*Figure 45 Government intervention in Fertiliser to increase utilisation*[70].

**The total of fertiliser imported and produced in Tanzania in 2022 was under 700,000MT, this represents a 52% gain off the sharp decline recorded in 2021** where volumes shrank by 37% the year prior as seen in Figure 46. This decline was driven by three key factors in the global market; the Ukraine-Russia war impacting availability and prices, importers hesitant to import due to pricing uncertainty and potential reduced demand and the Covid-19 pandemic. 40% of fertiliser imports are from 4 countries: Morocco, Finland, Russia and Oman, with Morocco accounting for 21% of all fertiliser import volumes. Fertiliser production in the country grew 26% p.a. between 2019 and 2021 but recorded a decline of 11% in 2022, as seen in Figure 47. The decline was due to one of the local producers; Minjingu, based in Manyara shutting down some of its lines to create room for expansion of production.

[70] Ministry of Agriculture

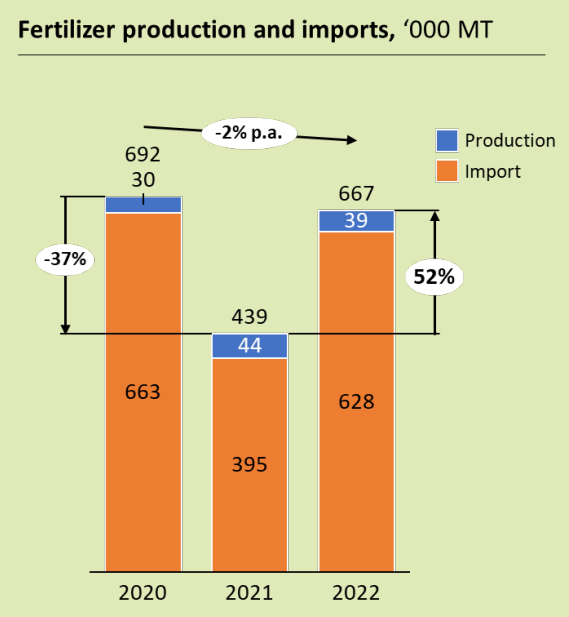



*Figure 46 Tanzania fertiliser production and imports 2020-2022*

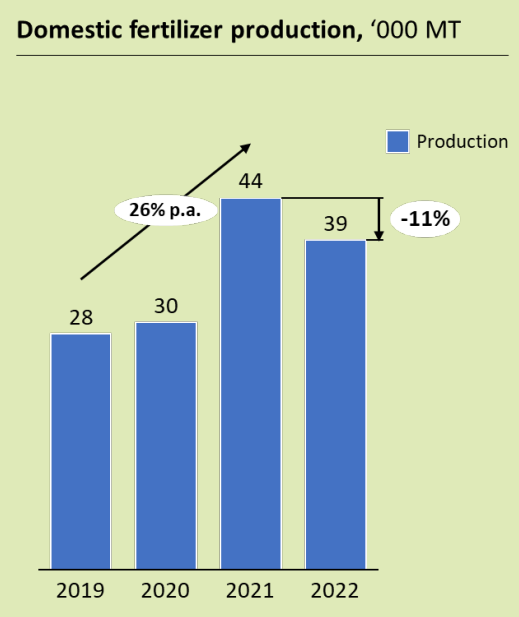



*Figure 47 Tanzania fertiliser production 2019-2022*

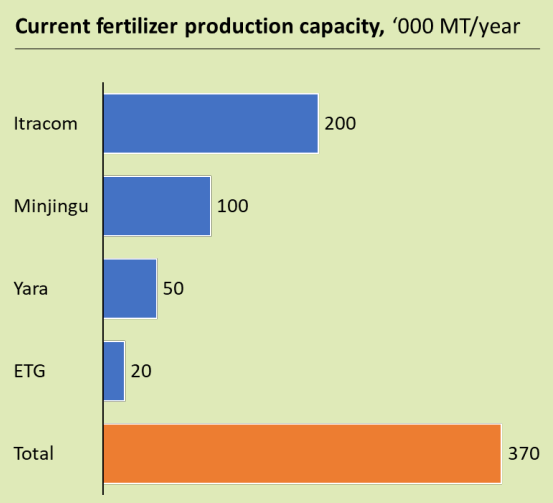



*Figure 48 Current fertiliser production capacity*

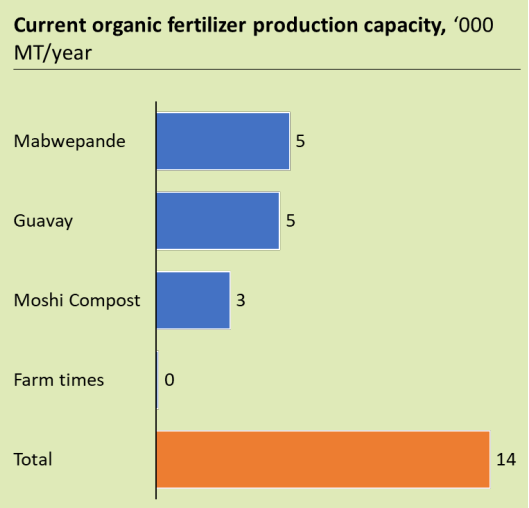



*Figure 49 Current organic fertiliser production capacity*

**Tanzania has a total blending capacity of 370,000MT of fertiliser annually, and 14,000MT to produce organic fertiliser annually** as seen in Figure 48 and Figure 49. 80% of fertiliser capacity is held by Itracom and Minjingu with plans to increase capacity to 1,000,000MT annually and 300,000MT annually respectively within the next 2 years. Itracom produces organo-mineral fertilisers combining minerals, organic waste/compost, Agri-lime, etc. in Dodoma. Minjimgu mines and Fertiliser Limited produce hyper phosphate mixed with micro-nutrients and granulate and blend NPK and NP compounds in Arusha. ETG and Yara are among the largest importers of fertiliser and have served majority of farmers for many years and produce NPK blends. ABM equipment services limited, and APP lime products company produce lime supplements in Tanga.

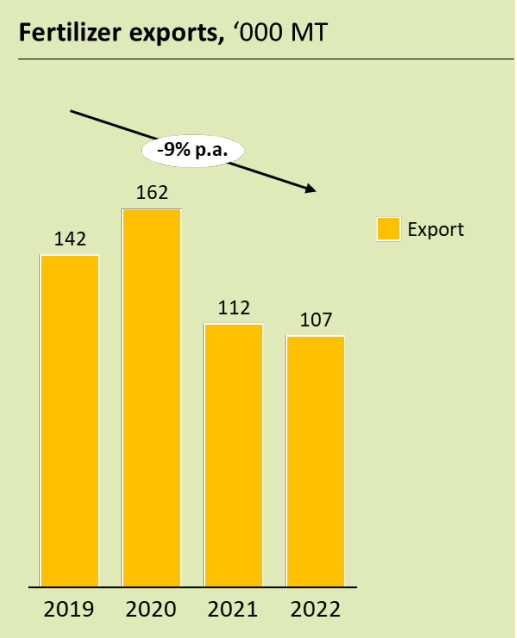



*Figure 50 Fertiliser exports 2019-2022*

**Overall, (re)exports of fertilisers from Tanzania to key destinations including Burundi, Rwanda and Kenya has been on the decline since 2020**, this is driven by misaligned regulatory framework with neighbours, informality, non-tariff barriers such as checkpoints, high port handling charges and transportation costs leading to neighbours seeking alternative sources.

**Crops opportunity #5: Increase domestic fertiliser production and blends.**

Develop domestic fertiliser industry to become the regional fertiliser hub levering available resources to build bespoke products which would improve productivity, soil health and build resilience against external shocks.

- Review subsidy: Improve the programme to support the inclusion of the domestic ecosystem and to support farmers who are prioritising the use of inputs in line with soil needs.
- Develop industry: Conducting feasibility studies to identify pathways to take on raw material use, production, etc., considering environmental impacts, economic viability and market needs.
- Trade polices: Align fertiliser regulatory framework with neighbours to facilitate trading of Tanzanian fertilisers.

***Improved Seeds***

**Currently, improved seed production for various food crops, cash crops, oil seed, horticulture, etc. satisfies only about 25% of effective demand and 13% of potential demand**[71]. Challenges in the production of improved seeds include a lack of irrigation infrastructure at Government-owned breeding and multiplication sites, outdated traditional methods of seed breeding leading to extended periods for new variety development, and prolonged seed certification processes. Currently, the Tanzania Agriculture Research Centre that is responsible for the production of breeding seeds, is only able to meet 23% of its target for staple/crop seeds and 20% for vegetative material, as illustrated in Figure 31. Additionally, the private sector production of improved seeds is limited, largely due to the lack of a predictable investment environment in the sector. Consequently, the overall seed availability has also been limited when compared to the effective seed demand, a gap which had worsen over the last 10 years are shown below. Projections estimate effective demand to reach as high as 600,000 tonnes by 2030[72].

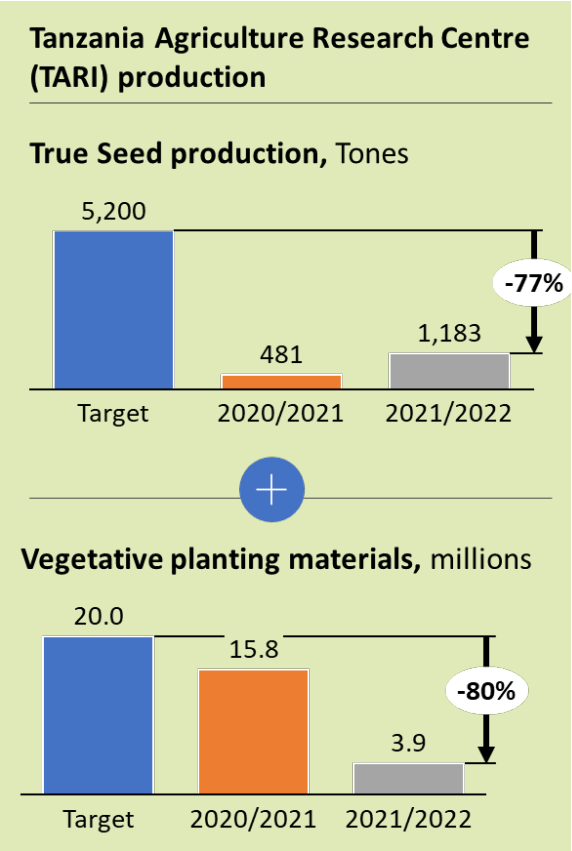



*Figure 51: TARI seed production*

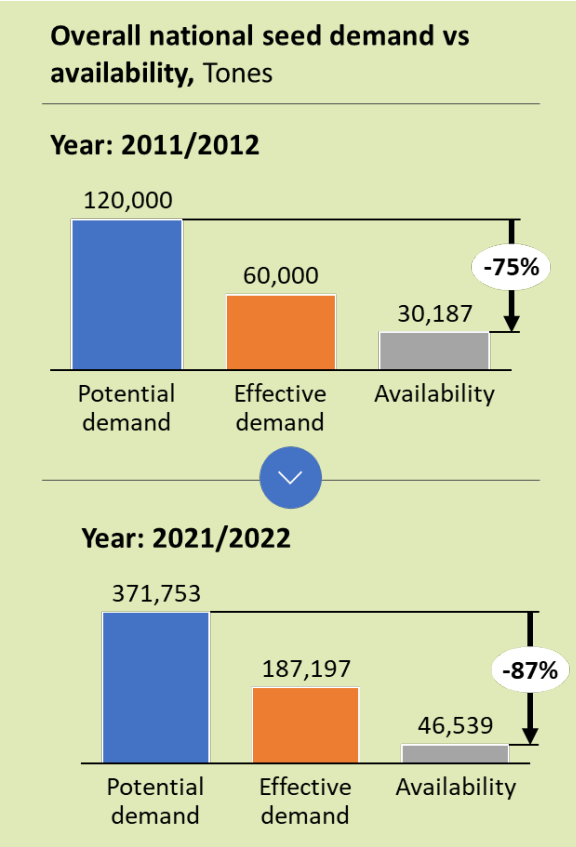



*Figure 52: Domestic seed demand and supply*

**Despite newer genetics being approved, most farmers still rely on seeds that are over a decade old**[73]. This is seen in Figure 53**Error! Reference source not found.** where most seeds certified for use in 2021, were dated between 2002-2007. This is further compounded by the challenge of low willingness to utilise improved seeds due to lack of awareness, limited financing, and consistent availability. Farmers would experience significant gain though the

[71] Tanzania Agriculture Research Institute

[72] ASA

[73] Ministry of Agriculture

adoption of improved seeds as they are bred to resist certain pests, diseases, adverse environmental conditions and generally have better germination rates and yields.

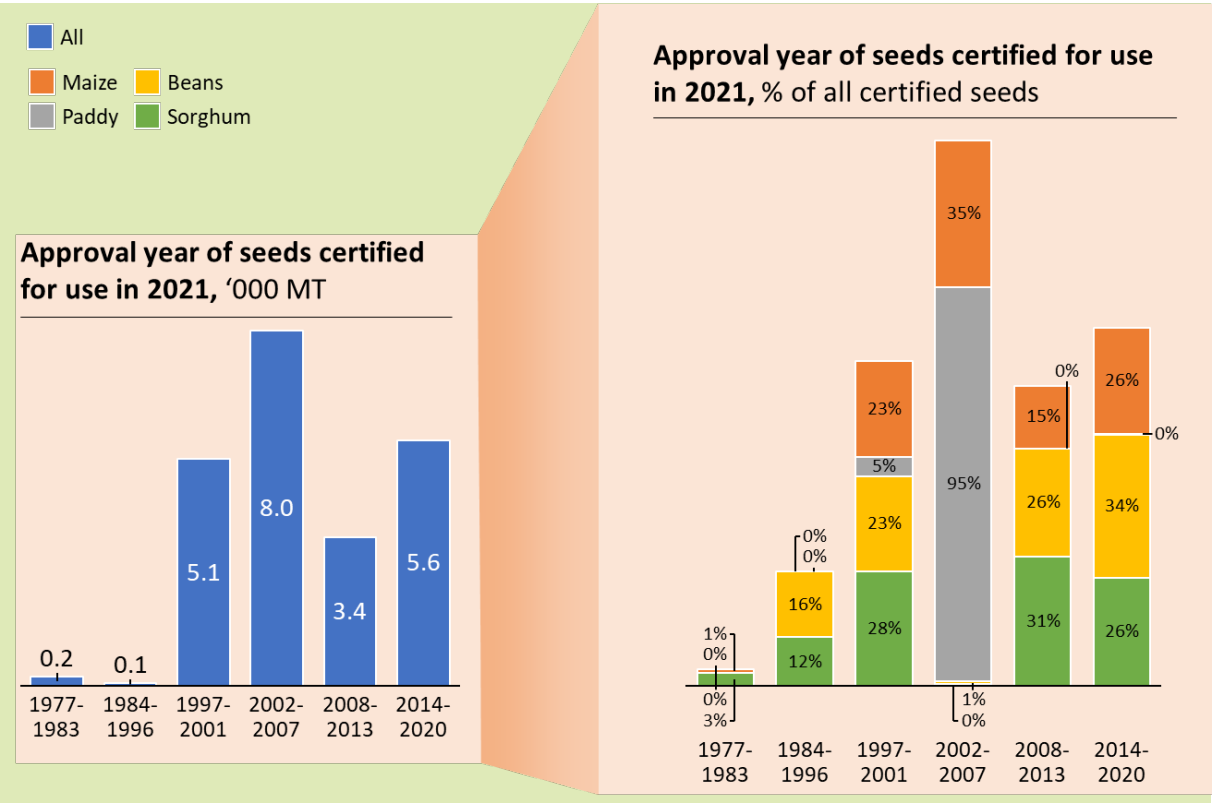



*Figure 53: Approval year of seeds certified for use in 2021*

**Crops opportunity #6: Increase seed production to improve productivity and build resilience.**

Increase capacity and capability to develop suitable, competitive, and resilient seed varieties adapted to Tanzania's climatic and agroecological characteristics, replicate these and make them available to farmers.

- Government led: Developing the capacity and capability of Government entities including TARI, ASA and TOSCI to develop, replicate and certify seeds required.
- Private sector led: Create business friendly environment for private seed companies to thrive in the seed production subsector.
- Coordination: Coordinate production efforts of public and private sector players in seed production to ensure availability of the right seeds, varieties, when needed.

***Crop Protection***

**Less than 20% of cultivated land is treated with crop protection products (CPP)[74].** Insecticides are the most applied CPP, with adoption rates of 23% of households during the long rains of R2020. There has been a 4 to 20 times increase in the use of crop protection products (CPP) in Tanzania between 2021 and 2023 as seen in Figure 54 which may be attributed to Government subsidies and recent pest outbreaks[75].

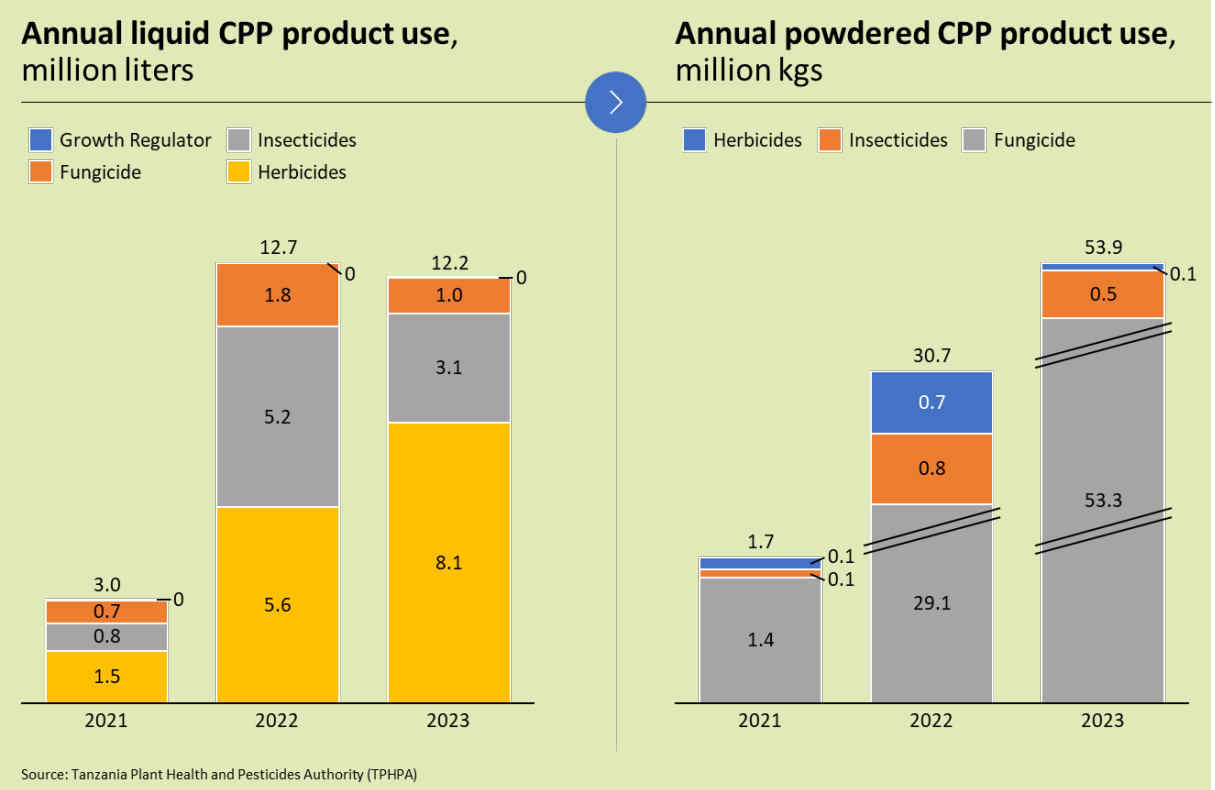



*Figure 54: Use of crop protection products in Tanzania, 2021-2023*

As seen in Figure 55, herbicide use in Morogoro, Mbeya and Songwe is high because Morogoro and Mbeya are major rice and sugarcane producers, while Songwe is a major sugarcane producer and herbicides are required for weed control. Fungicide use is high in Iringa, Kilimanjaro and Arusha because they are horticulture producing areas and need it for control of fungal diseases.

[74] 2021 National Agricultural census

[75] Tanzania Plant Health and Pesticides Authority (TPHPA)

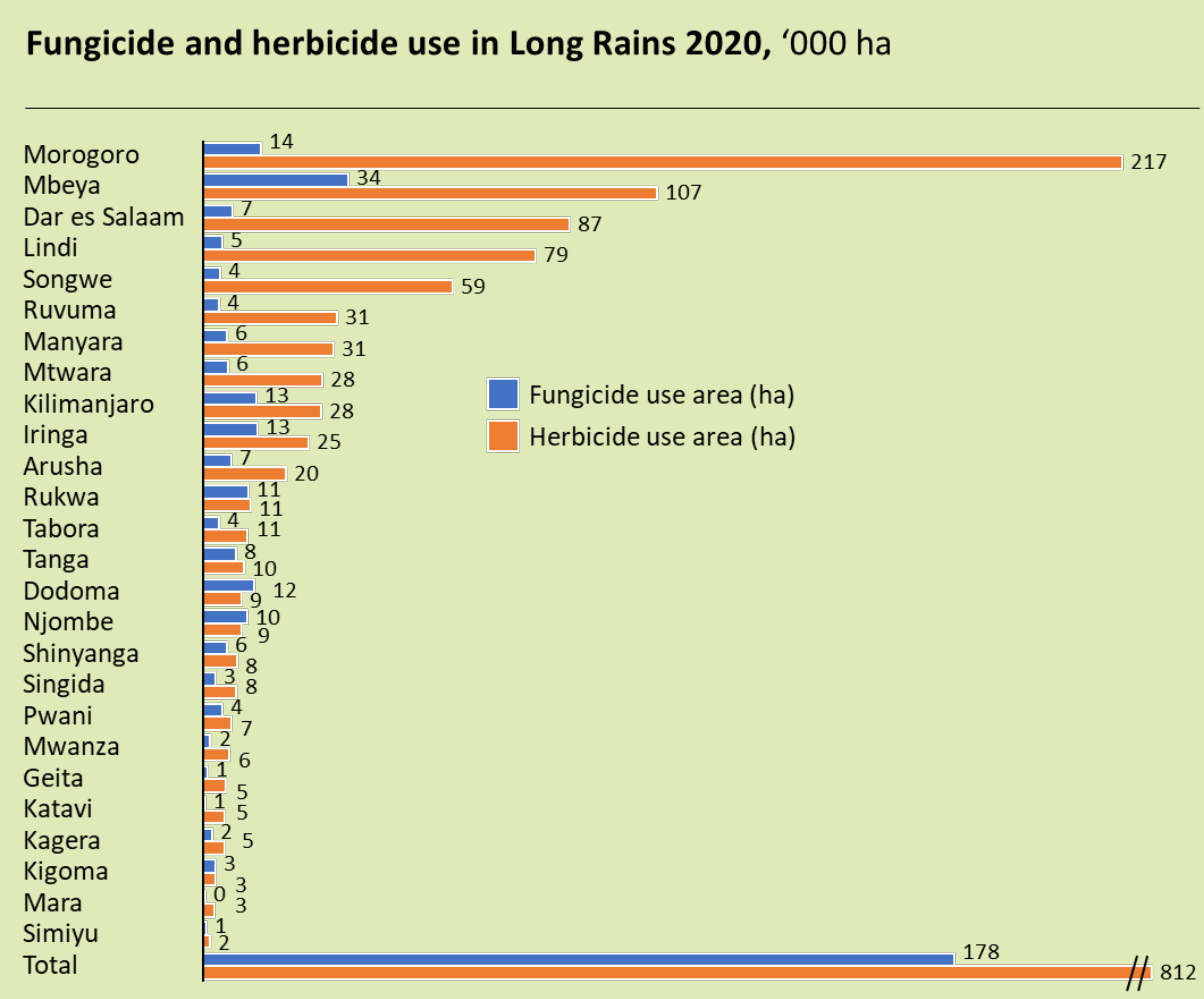



*Figure 55 Fungicide and herbicide use in Long Rains 2020*

### 3. Added value

3A. **In Tanzania, the agricultural sector is largely comprised of crops that are either consumed domestically, traded, or exported in their raw form.** This leads to the country not capitalising on its full potential from the crops produced. Only 13% of smallholder farming households engage in any form of agro-processing[76], despite 25% of registered manufacturing companies being agro-processors and employing more than half of the manufacturing sector's workforce[77]. Typically, processed agricultural products can fetch almost double the price of their unprocessed counterparts.

For specific crops, 12% of paddy and 5% of maize undergo processing by farming households, mainly to meet domestic consumption needs[78]. For cashew nuts, 90% of them are exported raw, with a mere 10% processed locally[79]. Cotton production only fulfils 20% of the country's

[76] Agriculture census 2019/2020

[77] Case studies on Tanzanian food processing enterprises

[78] Agriculture census 2019/2020

[79] Ministry of Agriculture

primary processing capacity, with most being exported as raw lint[80]. The sisal industry operates at a processing capacity of 50,000 metric tonnes (MT) per year, despite having a potential harvest of up to 80,000 MT/year[81]. Within the horticulture sector, only 8% of harvests are processed, while the rest is consumed fresh locally[82].

***Limitations in added value*** [83]

3B. **Added value within Tanzania is constrained by various factors such as supply chain inefficiencies due to poor road infrastructure, inadequate village-level storage, and the seasonal availability of raw materials**. Quality issues also plague the industry; for example, locally produced wheat does not meet the gluten requirements for processing, leading to increased imports. The lack of access to technology and skills limits the range of products that can be derived from commodities and affects the quality of the output, especially with SMEs unable to meet quality requirements stipulated by the Tanzania Bureau of Standards (TBS). Regulatory hurdles around taxation and high production costs due to expensive technologies and operating expenses, such as electricity, further hamper the growth of the processing sector.

## 4. Market Access

***Export Market***

4A. **Tanzania's agricultural exports were valued at US$1.2 billion, with cashew nuts, rice, coffee, cotton, and maize being the primary exported crops in 2022 as seen in** Figure 56**.** Horticulture exports have grown at a rate of 14% per annum and now represent half of traditional cash crop exports as seen in Figure 57. However, there is a declining trend in the export of traditional cash crops, falling by 6.5% per annum as seen in Figure 58[84].

[80] Tanzania agriculture and processing; crop board

[81] Crop board

[82] National Horticulture Masterplan

[83] A review of the challenges affecting the agro-processing sector in Tanzania

[84] 2022 National Economic Survey

| Commodity | Export value TZS Bn, 2022 | |
|---|---|---|
| Cashew | 528 | China, India, UAE |
| Rice/ Paddy | 427 | Kenya |
| Tobacco | 415 | China India, UAE |
| Coffee | 375 | China India, UAE |
| Cotton | 241 | China, Kenya, US, Pakistan |
| Maize | 166 | Kenya |
| Wheat | 122 | Vietnam, DRC, Burundi |
| Avocado | 122 | India |
| Soyabeans | 68 | China |
| Sisal | 57 | China, DRC, Spain |
| Sunflower | 34 | Kenya, India |
| Cassava | 8 | DRC, Burundi, Uganda |
| Others | 286 | |
| Total | 2,849 | |

*Figure 56: Key 2022 export commodities and key destinations*[85]

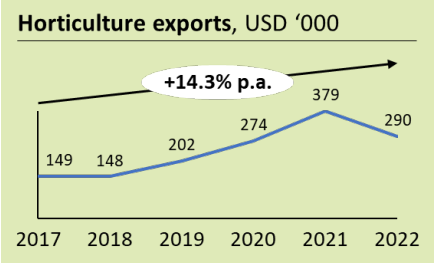



*Figure 57: Horticulture exports, 2017-2022*

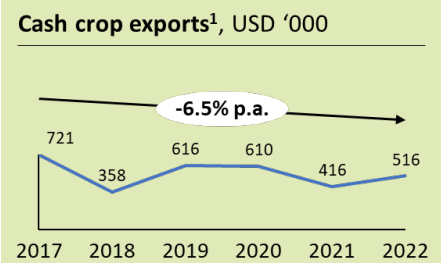



*Figure 58: Cash crop exports, 2017-2022*

### *Export Limitations*

**Tanzania's export capacity suffers from inadequate infrastructure, including border ports, airports, and seaports**. The limited cargo capacity often results in delays, and exporters sometimes use passenger planes for shipment. Comparatively, Tanzania's airfreight capacity is significantly smaller than Kenya's, which also ends up handling some Tanzanian cargo. Additionally, lack of preferential treatment for perishables and insufficient sanitary and phytosanitary facilities at ports pose risks for Tanzanian exports.

**Crops opportunity #7: Increase added value and market access.**

Create access to warehouses to expand access to markets and better prices for farmers and attract investors to widen added value capability and capacity.

- Warehouse access: Create an enabling environment for private sector investments to establish warehouses close to farmers which can be used to store produce which utilise channels such as TMX or warehouse receipt systems to fetch favourable markets and prices.
- Added value: Enable the private sector to invest in processing plants across the country to add value to commodities before sale and export.

[85] Tanzania National Bureau of Statistics; United Nations Comtrade database

***Farmer Organisation***

4B. **Farmer organisations, particularly cooperatives and groups, play a crucial role in accessing both domestic and export markets**.

*Cooperative Groups*

- Cooperatives are prevalent in traditional cash crops and some major food crops.
- They generally engage in some level of primary processing and utilise slower market access models due to longer shelf life.
- Market access is achieved via warehouse receipt systems, auctions, or direct sales, with input access often facilitated through cooperatives or crop boards.

*Farmer Groups*

- Smallholder horticulture farmers often form agile groups to access markets quickly due to the perishable nature of their produce.
- These groups tend to sell produce in fresh form and utilise various aggregation models, such as off-takers, to access markets.
- Input access is arranged directly or through contract farming with off-takers.

**Crops opportunity #8: Support farmers to organise themselves so they can access formal services, inputs and markets.**

Create an ecosystem of public and private initiatives to provide farmers with support to organise and access relevant tools and services to realise their full potential though the best aggregation programmes possible.

- Build on existing Government programme: programmes such as the BBT could be used to develop youth-led SMEs which can provide these services to farmers.
- Utilise the power of the private sector: models such as incubators have been successful at creating and nurturing innovative businesses which solve major challenges and could be used to unlock the provision of rounded services to farmers.

**Crops opportunity #9: Investment in early warning systems to improve resilience.**

Establish an early warning and response systems which can trigger response in record time to mitigate damage against risks including extreme weather effects e.g., drought, pest and disease outbreaks, etc.

- Create an integrated digital system: leveraging early warning desks across ministries and Government agencies, establish a system with capabilities to monitor all relevant indicators.
- Create a mechanism and capability to respond/act: create resources e.g., food and feed reserves, policy and accountability to enable ability to respond appropriately in the event of a disaster.

***Domestic Market***

4C. **Tanzania's national food requirement is projected to reach 20 million tonnes by 2030, driven by population growth and rising domestic income as seen below**. Coarse grains, particularly maize, constitute 40% of the country's caloric intake, while rice consumption is growing at 12% annually as seen in Figure 59. Most of the horticulture produce is consumed domestically, reflecting a demand for healthier diets and the growth of the middle class.

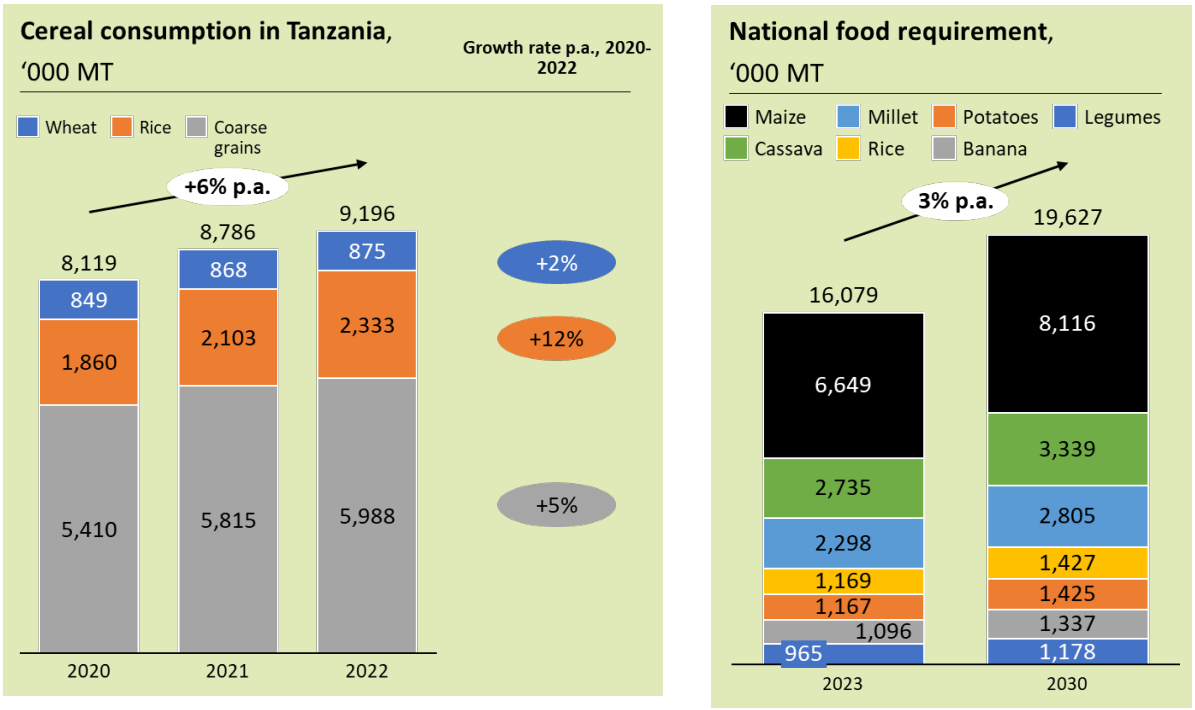



*Figure 59: Cereal consumption in Tanzania 2020-2022*[86]

### *Food Security and feed availability*

**The prevalence of chronic malnutrition (stunting) in children under the age of 5 has decreased over the years as seen in** Figure 60 **from 42% in 2010 to 30% in 2022**. This implies a reduction of about 4.6% after every five years. Half of the regions in Tanzania are experiencing stunting prevalence of ≥30%, with high prevalence ≥40% in food basket regions (Iringa, Rukwa, and Njombe) as seen in Figure 61[87].

[86] FAO 2020 cereal supply and demand balance in Africa; FAO 2021 cereal supply and demand balance in Africa; FAO 2022 cereal supply and demand balance in Africa;

[87] Tanzania TDHS-MIS 2022 Summary Report English and Swahili
https://www.nbs.go.tz/nbs/takwimu/dhs/Tanzania_DHS-MIS_2022_Summary_Report_English_and_Swahili.pdf

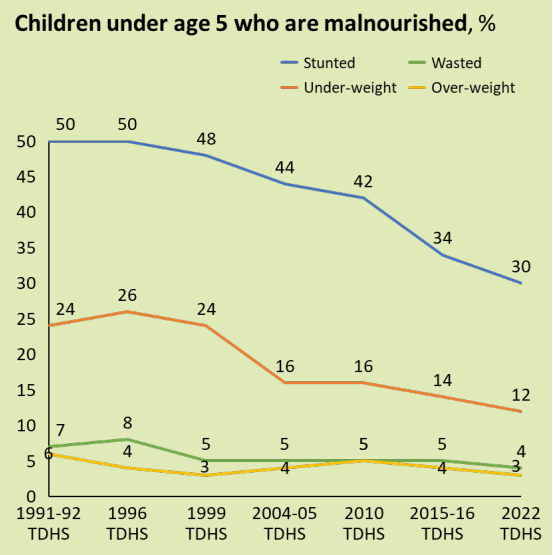



*Figure 60 Trend of children under 5 who are malnourished in Tanzania*

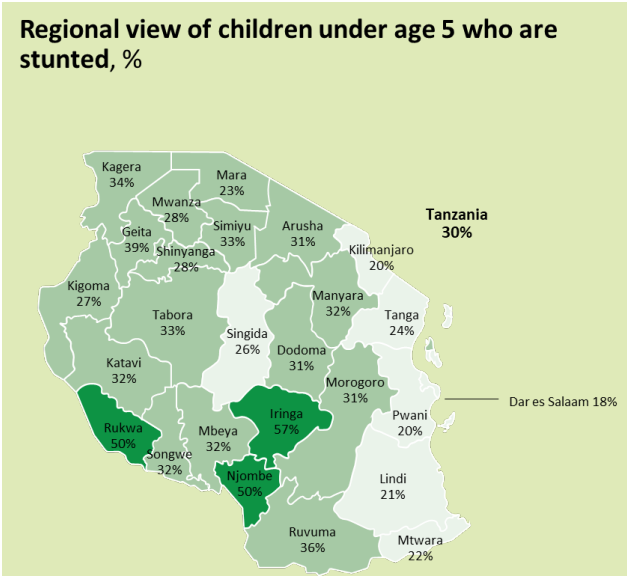



*Figure 61 Regional map showing children who are stunted in Tanzania.*

Although known as the 'breadbasket of East Africa,' the country's food insecurity rate is relatively high, with staple food prices seeing substantial increases. For example, maize prices more than doubled last year as seen in Figure 62**Error! Reference source not found.**.

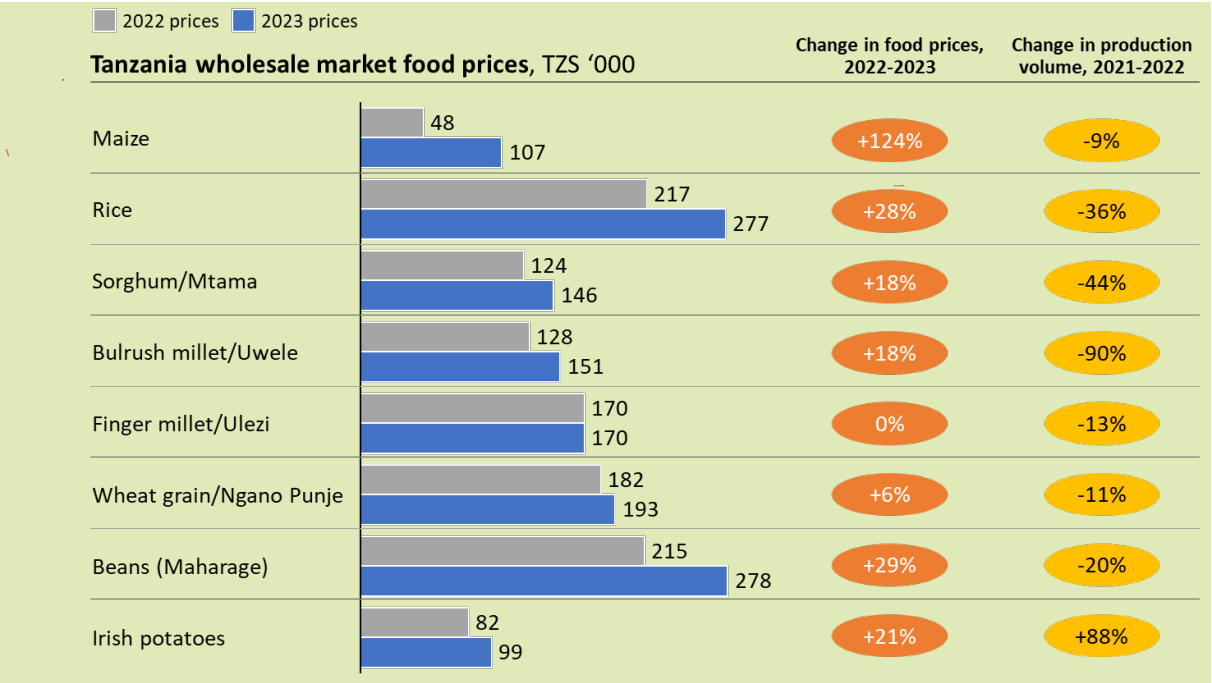



*Figure 62:Tanzania wholesale food prices, 2022-2023*

**Additionally, livestock and aquaculture feed demands are largely unmet**, contributing to the food security challenge. As seen in **Error! Reference source not found.** Aquafeed and p oultry 24% of aquafeed demand is left unmet and in **Error! Reference source not found.**, 62% of poultry demand is left unmet[88].

[88] Ministry of Livestock and Fishery

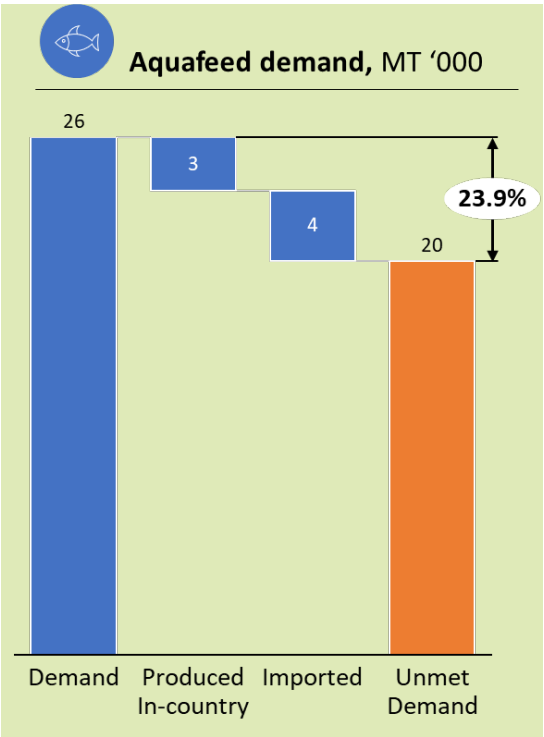



*Figure 63: Estimated aquafeed demand*

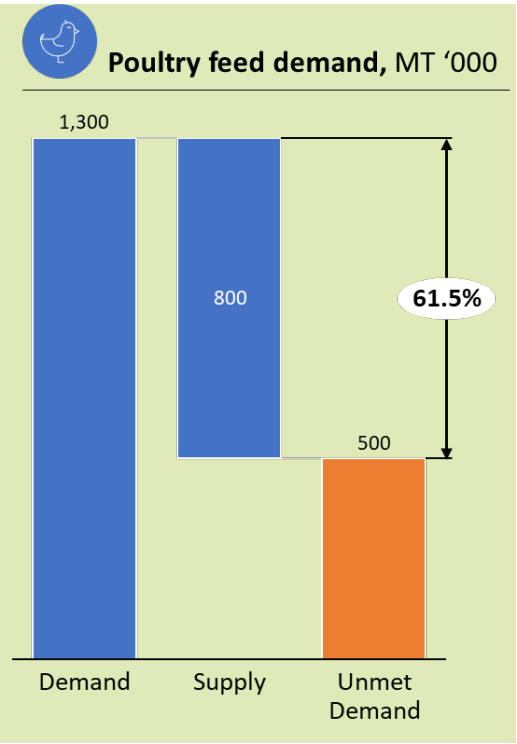



*Figure 64: Estimated poultry feed demand*

### *Import Bill*

**Palm oil and wheat constitute half of Tanzania's import bill of TZS 1,842 billion in 2021, as seen in** Figure 65**.** The decline in food imports as a percentage of total national imports suggests an increase in local production, with initiatives underway to achieve self-sufficiency in sugar production by 2024. Tanzania's primary trading partners include the UAE, South Africa and India which accounts for a significant portion of food imports, as seen in Figure 67.

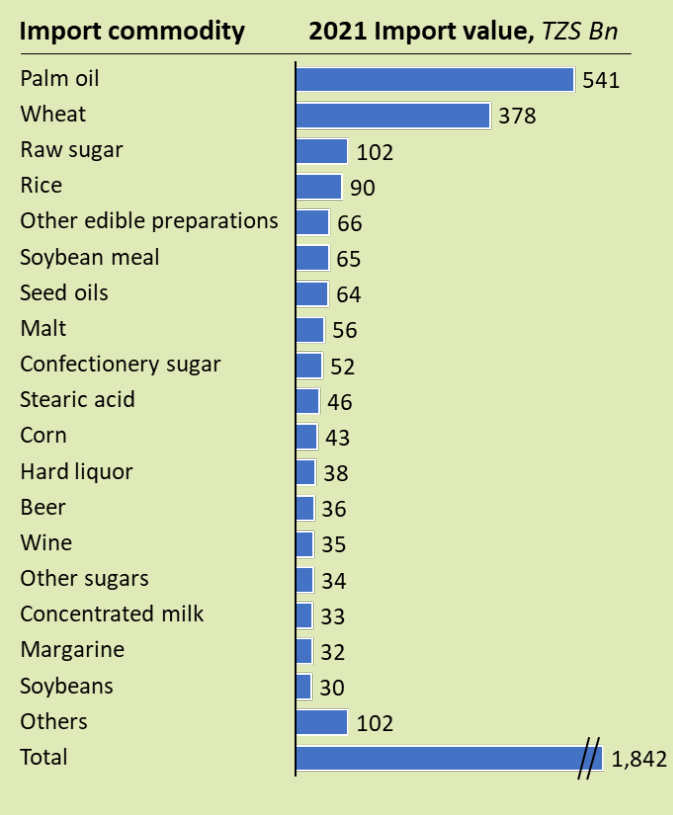



*Figure 65: Key 2021 import commodities*[89]

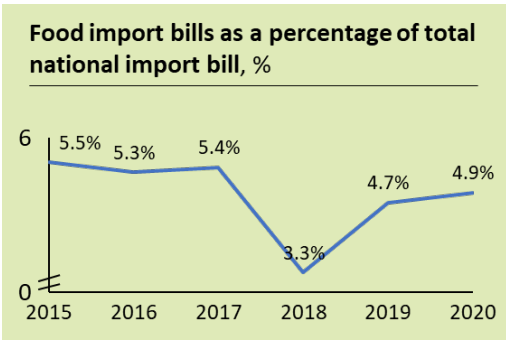



*Figure 66 Food import bill as a percentage of total import bill, 2015-2020*[90]

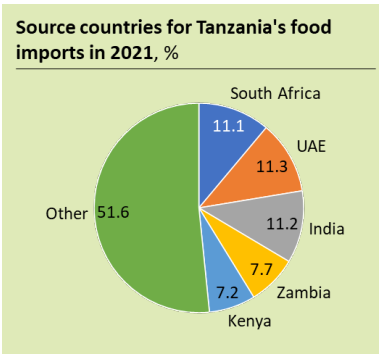



*Figure 67: Key source countries for Tanzania's food imports*[91]

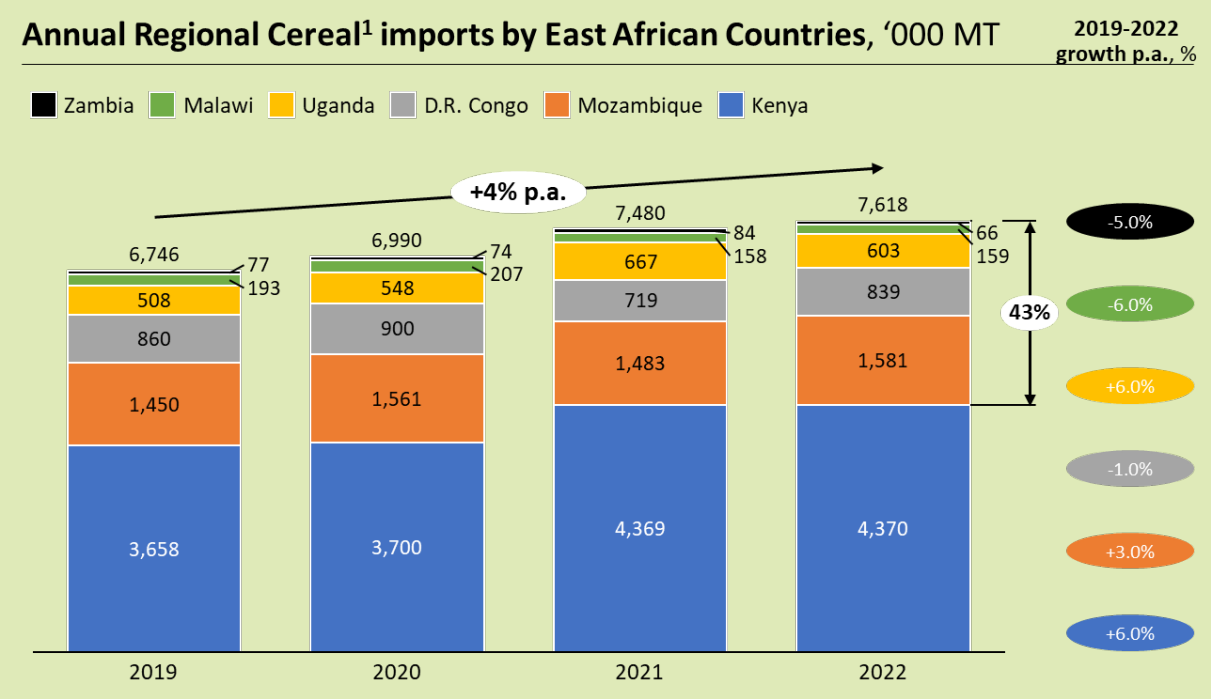
### *Regional Trade*

**As seen in Figure 68, the trade of cereals in the East African region, has been on an upward trajectory, growing by 4% annually over the last four years**, predominantly driven by Kenya, which constitutes 60% of the region's cereal imports. Kenya, alongside Uganda, has experienced the highest growth rates in cereal imports at 6% per annum, fuelled by increased imports of both wheat and coarse grains in Kenya and wheat in Uganda. In contrast, Zambia and Malawi have witnessed a decline in cereal imports at an approximate rate of 6% per annum within the same timeframe. These trends reflect the dynamic nature of regional agricultural trade and the varying capacity of countries to produce or import essential food commodities.

[89] Tanzania National Bureau of Statistics

[90] Economic Survey 2022

[91] United Nations Comtrade database




92

*Figure 68: Annual regional cereal imports by East African Countries*[93]

In the case of Tanzania, cereal imports are dominated by wheat, which accounts for 80%-90% of imports, as see in Figure 69. Overall, cereal imported to Tanzania is below the regional import trend, suggesting that the increased sufficiency is mainly driven by declining reliance on imported rice.

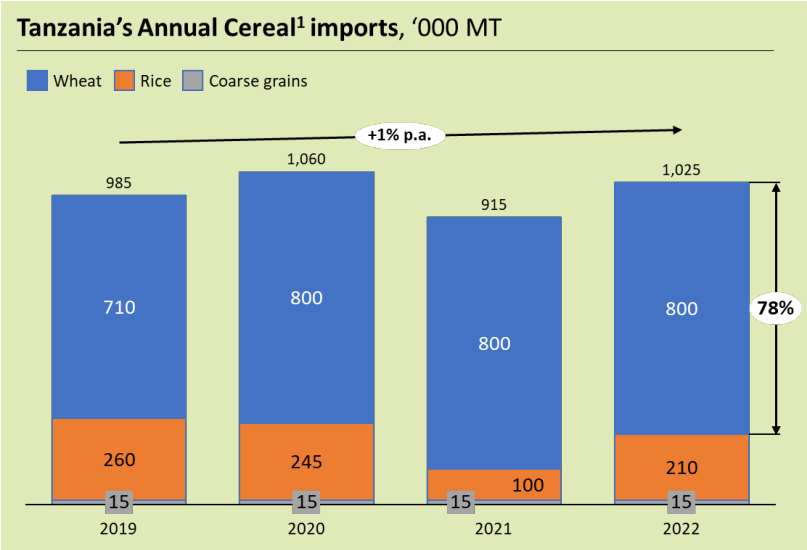



*Figure 69 Tanzania's annual cereal imports*

92 Includes: Wheat, rice, barley, sorghum, millet, rye; Excluding Tanzania at 1,025MT cereal imports in 2022, mainly driven by wheat

93 FAO 2020 cereal supply and demand balance in Africa; FAO 2022 cereal supply and demand balance in Africa

## II. Opportunities

**Opportunities across the value chain**

Based on the situation, opportunities across the value chain have been identified which are critical to transform the crops sector. These opportunities are shown below:

**Summary of Crop opportunities:**

1. Improve **access to land** for commercial activities and smallholder farmers.
2. Improve **soil health** to reduce further degradation through climate smart agricultural practices.
3. Increase **area under irrigation** to improve productivity and build resilience.
4. Increase production and sale/exports of **major food and cash crops** though improved board execution.
5. Increase domestic **fertiliser production** and blends.
6. Increase **seed production** to improve productivity and build resilience.
7. Increase **added value and market access.**
8. Support **farmers to organise** themselves so they can access formal services, inputs and markets.
9. Investment in **early warning systems** to improve resilience.

## Commodity-specific opportunities

Beyond the opportunities across the value chain, it is critical to identify commodities with the highest potential for the transformation. These have been selected based on the following criteria: share of agricultural GDP, potential for growth, contribution to small holder income resilience and sustainability and diet quality. The selection for specific commodities allows for an increased focus on impact and for a regional lens to the needed interventions.

| | | Criteria | | | | | |
|---|---|---|---|---|---|---|---|
| | Commodities | Share of ag. GDP, % | High growth potential | Small-holders | Resilience & sustai-nability | Better Diet | Region |
| **Horti-culture** | Fruits (focus on avocado and banana) | 11.9% | ✓ | ✓ | | ✓ | Iringa, Arusha, Kilimanjaro, Njombe, Tanga, Mbeya, Morogoro, Kigoma, Kagera |
| | Spices (focus on cloves) | 0.2% | ✓ | ✓ | ✓ | ✓ | Tanga, Morogoro |
| | Vegetables (focus on cassava and potatoes) | 6.2% | ✓ | ✓ | | ✓ | Njombe, Arusha, Kilimanjaro, Mbeya, Iringa, Morogoro |
| **Traditional Cash crops** | Cotton | 2.4% | ✓ | ✓ | | | Simiyu, Mwanza, Geita, Shinyanga, Mara |
| | Cashew | 1.3% | ✓ | ✓ | | | Lindi, Mtwara, Pwani, Ruvuma, Tanga and Singida-Manyoni |
| | Sisal | 0.2% | ✓ | ✓ | | | Tanga, Morogoro |
| | Coffee | 1.0% | ✓ | ✓ | | | Kilimanjaro, Kagera, Arusha, Mbeya, Songwe, Ruvuma |
| **Cereals** | Maize | 7.5% | ✓ | ✓ | ✓ | ✓ | All |
| | Paddy | 7.8% | ✓ | ✓ | ✓ | ✓ | Morogoro, Mbeya, Shinyanga, Mwanza, Kilimanjaro |
| | Sorghum | 2.4% | ✓ | | ✓ | ✓ | Dodoma, Singida, Shinyanga, Mwanza, Mara, Lindi, and Mtwara |
| | Wheat | 0.3% | ✓ | | ✓ | ✓ | Manyara, Arusha, Kilimanjaro, Mbeya, Njombe, Rukwa, |
| **Oilseeds** | Sunflower | 1.1% | ✓ | ✓ | ✓ | ✓ | Dodoma, Singida, Manyara |
| | Sesame | 1% | ✓ | ✓ | ✓ | ✓ | Lindi, Dodoma, Ruvuma |
| **Pulses/ beans** | Soyabeans | 0.2% | ✓ | ✓ | ✓ | ✓ | Ruvuma, Mbeya, Njombe, Iringa, Lindi, Mtwara, Songwe, Morogoro, Rukwa |
| | Kidney beans (and other pulses) | 1.0% | ✓ | ✓ | ✓ | ✓ | Ruvuma, Simiyu, Mbeya, Lindi, Mtwara, Shinyanga, Kagera, Kigoma |

*Figure 70: Crops commodity-specific opportunities.*

## D. Livestock sector

### I. Situation

**The role of the livestock sector in Tanzania's economy**

**The livestock sector is pivotal to Tanzania's prosperity and growth. It is a major employer and an important contributor to healthy nutrition.** The sector accounts for 32% of GDP from agriculture (~7% of all GDP) and over 50% of households are actively engaged in livestock rearing.[94,95] For many families, livestock is both an economic pursuit and an integral aspect of their daily lives.

**While livestock products such as meat, milk, and eggs are important for enhancing nutrition, they accounted for only a modest 6.5% of the average Tanzanian diet in 2017** (as measured by average caloric intake)**.** Animal protein contributed 16% of daily protein consumption (10/64 grams). In contrast, vegetable protein accounted for a substantial 78% of daily protein intake (50/64 grams), and fish for 6% (4/64/grams).[96] To put this into perspective, global daily protein supply is on average 84 grams, with 39% derived from animal products (33/84 grams).[97]

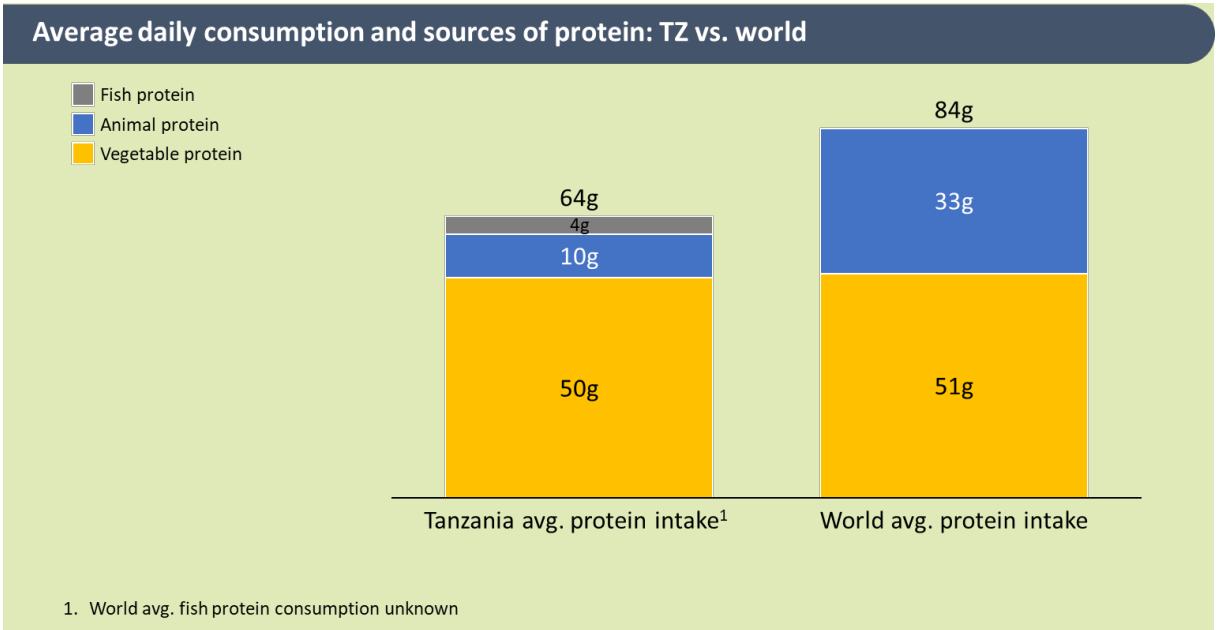



*Figure 71: Sources of protein consumption in Tanzania and in the world*

**Value chains selected for diagnostic**

[94] Tanzania Agricensus report 2019/2020

[95] Livestock Modernisation Initiative

[96] National Food Balance Sheet 2017/2018 (excludes 4g of protein from fish products)

[97] Food and Agriculture Organisation (FAO)

**For this Master Plan, four commodities are prioritised: poultry (specifically chicken), dairy, beef, and goat meat/mutton.** The Livestock Sector Analysis for the period 2016/2017 outlines eight types of commodity: beef and live cattle, dairy, goat meat and live goats, mutton and live sheep, hides and skins, chicken meat, chicken eggs, and pork and live pigs.[98] However, for the purpose of this Master Plan, chicken meat and chicken eggs were consolidated into a single value chain, and goat and sheep were combined into another value chain referred to as 'small ruminants.' The pork and live pig value chains were not selected as part of the diagnostic. Together they constitute the smallest part of the sector as measured by contribution to GDP (3% of the livestock total). Hides and skins were examined as secondary products during the added value portion of the livestock diagnostic.

[98] Livestock Sector Analysis 2016/2017

# Diagnostic livestock

Cross-sector | Diary | Goat and mutton | Beef | Poultry

## 1 Land and water management

**1a Land availability:**

- **~6%** of total land is **allocated for grazing** (3.3M Ha)

**1b Water availability:**

- **Est. deficit of 115B liters/ year**

  Reported uptick in land disputes between pastoralist/ other land users, partly driven by low resource availability

## 2 Production and productivity

**2a Regional production:**

- ~60%+ **of dairy, beef, goat, and mutton** production is concentrated in 9 regions, but increasing migration patterns South
- **Poultry production is more widely disbursed**

**2b Yields:**

- **Avg. yields is lower than East Africa avg,** except for goat/sheep
- 140 vs. 152 kg/cow
- 395 vs. 519 liters/ cow
- 21 vs. 12 kg/goat
- 1.0 vs. 1.3 kg/ chicken

**2c Breeds and productivity:**

- **~50% of poultry, 95% of cattle, and 99% of sheep/ goat are indigenous breeds, (lower yields, but higher resilience)**

**2d Production systems:**

- **Three production systems:** pastoralist (2%), agro-pastoralist (~95%), and commercial (3%)
- **Two production systems:** smallholder vs. commercial (70% vs. 30% in poultry | 90% vs. 10% in dairy)

**2e Inputs:**

- Availability of bulls/ heifers, and quality AI services vs. demand is low
- **Feeds and vaccines are below demand/** guidelines (e.g., domestic production shortage of 770M vaccine doses/ year)

**2f Cost of animal raising vs. regional peers:**

- **Less costly** than Kenya: 17% less costly (poultry), 41% less costly (dairy), red meat (N/A)

## 3 Value addition

**3a Processed products:**

- **<10%** of poultry meat and **<5%** of all red meat/ milk is processed
- **Consumer preferences** are for fresh, warm meat and **boiled milk at home**
- Majority of **hides & skins** are lost **before collection, and 90%+** hides & skins are **not processed into leather**

## 4 Market access

**4a Production vs. consumption, (incl. imports and exports):**

- **<95% of production sold domestically**
- **Goat/sheep is the largest meat export** (90%+ of all meat exports)

**4b Systems of market access:**

- **Certain systems** are more **prevalent in specific value chains** (e.g., contract farming most common in poultry and communal marketing most common dairy, whereas individual farmer sales more common amongst red meat animals)

Based on feed conversion ratio, land usage, and $CO_2$ emissions

## 1.Land and water

1A. **Healthy and suitable grazing lands are vital for animal health and livestock productivity, but relatively little suitable land is currently available.** Only ~6% of Tanzania's land mass is designated for grazing (3.38 million hectares), while the true extent of land usability remains uncertain because of overgrazing, soil degradation, and bush encroachment. Grazing lands suitability could significantly improve with increased production of high quality pastures. However, pasture seed shortages present a challenge to increased production. Against an estimated demand of 100,000+ tonnes of pasture seeds a year, current production amounts to less than 23,000 tonnes a year.[99]

1B. **Productivity improvements in livestock are closely linked to the availability of water of which there is currently an estimated deficit of approximately 115 billion litres per year.**[100] This is significantly reducing yields and is a trigger of increased land conflicts between arable and livestock farmers. Virtually no grazing lands benefit from irrigation. Primary water sources, dams, and boreholes all fall short in delivering what is properly required for livestock. The country is short of some 500 charcoal dams and 210 boreholes. In addition, climate change is prolonging dry seasons which is worsening the situation.

**Livestock opportunity #1: Scale commercial pasture production and improve water availability for livestock**

Scale the production of pasture and pasture seeds to improve meat and milk yields (through improved grazing lands), reduce animal mortality rates, and reduce land conflicts between crop farmers and livestock keepers:

- Pasture production: pursue a dual-production approach by private producers and smallholder farmers (providing smallholders with training and access to critical inputs including seeds and parcels of land (e.g., through Farmer Field Schools)). Encourage grasses such as Buffel grass, Rhodes, Brachiaria, Juncao, Alfaalfa, Centrocema, and Calopo *
- Pasture seed multiplication: expand seed multiplication in Government facilities and encourage more private pasture seed companies to invest in Tanzania. Furthermore, continue efforts to certify the first domestic pasture seed via TALIRI/TOSCI, subject to its competitiveness against other established seed varieties

**Not exhaustive*

## 2. Production and productivity

*2A. Regional production:* **beef, small ruminant, and dairy production are heavily concentrated in three zones – Northern Highlands, Central, and Lake zones –** comprising some 60% of total production. There is, however, an ongoing trend for migration to the South, although exact numbers remain unknown.

[99] The Potential of Tanzania Mainland for Production of Juncao Grass (Dr. Asimwe Lovince) 2022

[100] Department of Grazing Lands, Expert Interview (Assumes 25 litres/day required for cattle and 4 litres/day required by goat and sheep, which comprises majority of water requirements)

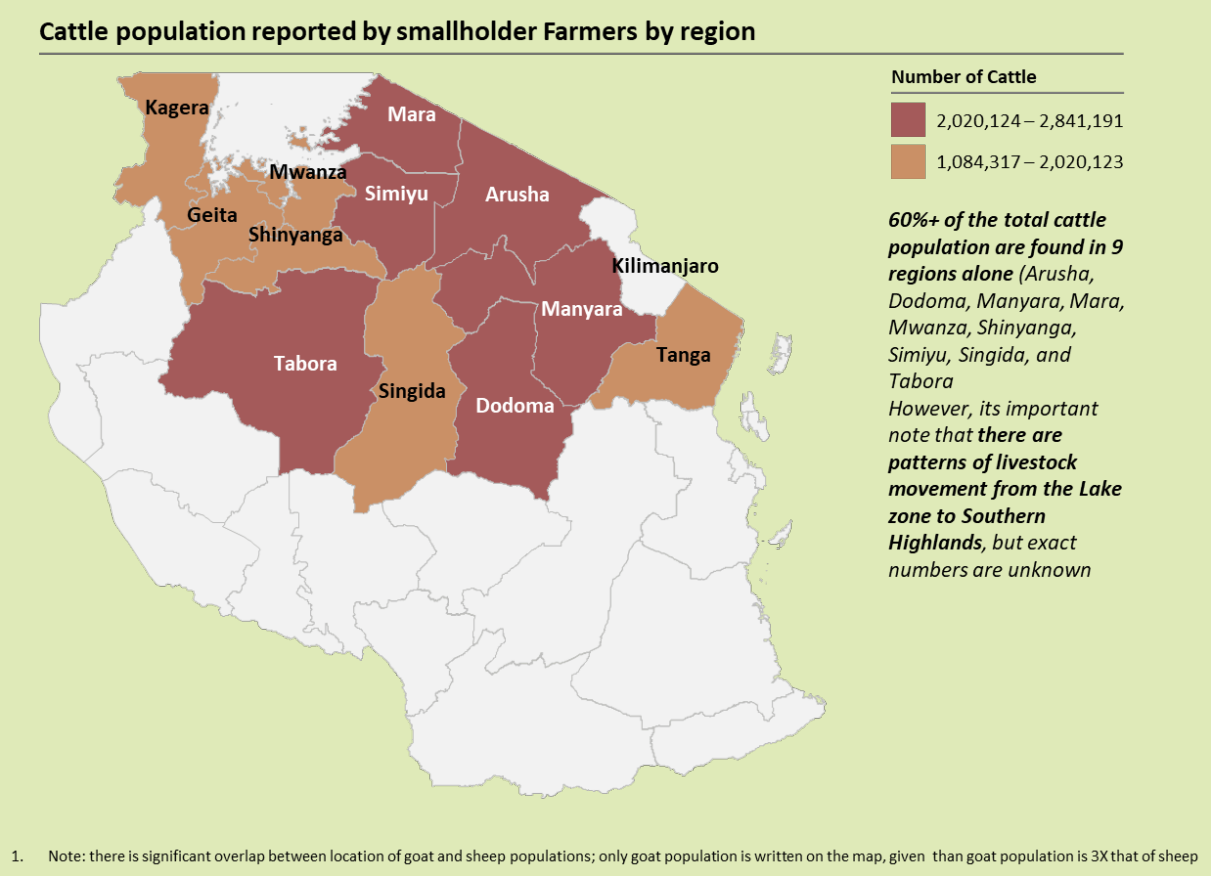



*Figure 72: Cattle Population Reported by Smallholder Farmers by Region in Tanzania as of 1st August 2020 (Source: Agri-Census Report). Only cattle population depicted on map, but there is heavy overlap between small ruminant population and cattle population*

**In contrast, poultry production is widely dispersed across the country.** Raising poultry does not require access to dedicated grazing and is relatively affordable for a wider range of smallholder farmers.

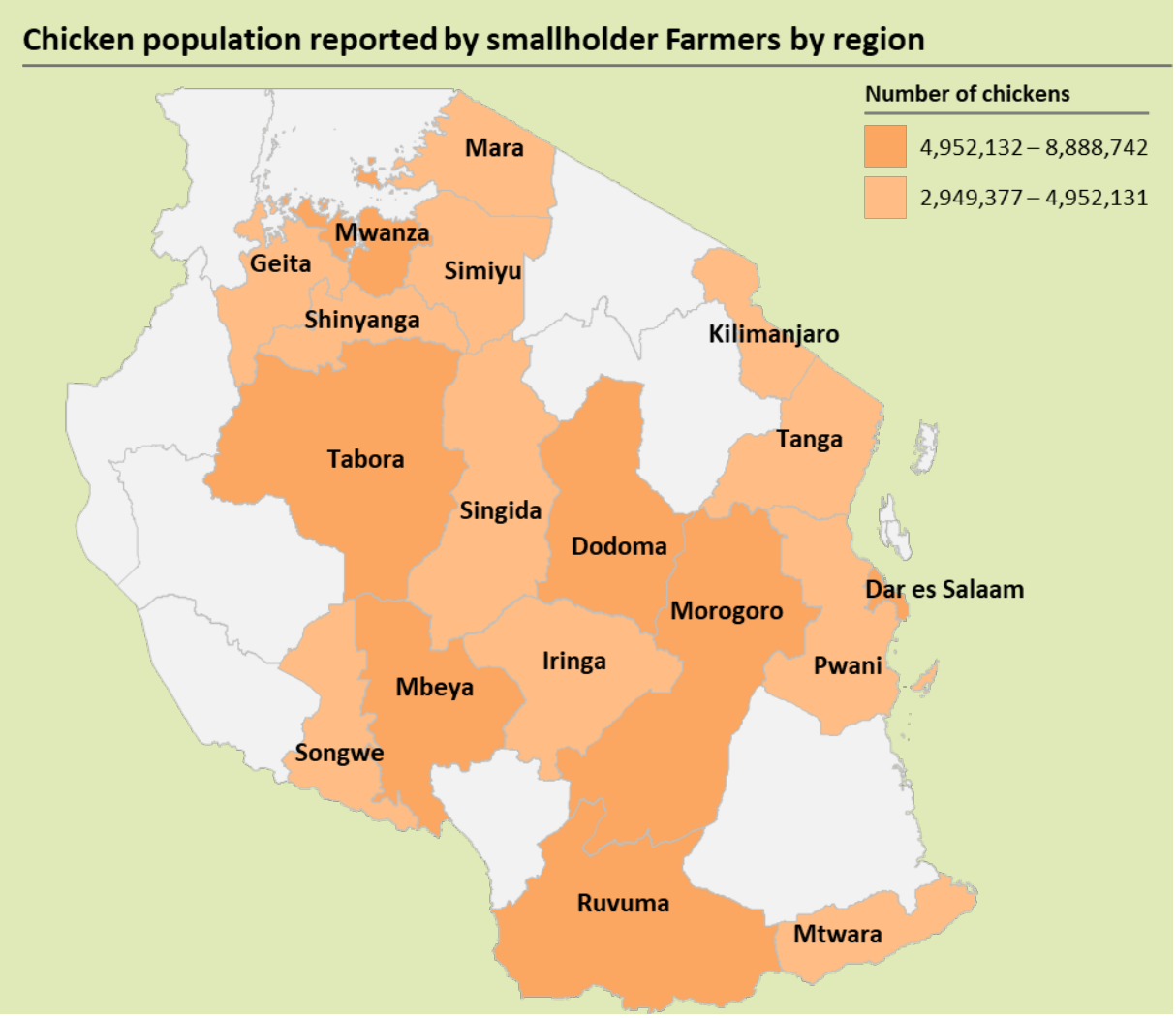



*Figure 73: Chicken Population Reported by Smallholders by Region in Tanzania as of 1st August 2020 (Source: Agri-Census Report)*

*2B. Yields:* **with the exceptions of goat meat and mutton, per capita meat and milk yields lag East African averages** as seen on Figure 74. High yields enhance smallholder farmer incomes and ensure widespread availability of nutritious products. Moreover, achieving reliable, specific yield thresholds is crucial for products to be viable for market offtake. If yields are too low, farmers may be unable to sell through formal market channels and may instead choose at-home subsistence or sales to neighbours. Establishing all the reasons for lower yields is challenging, but two factors stand out: reliance on indigenous breeds and production system inefficiencies. The following sections explore the prevalence of different breeds and their associated livestock production systems. In turn, these features can be related to ways to improve productivity.


1. Here we define productivity as avg. yield/ animal, however other definitions of productivity could include: ratio of improved yields vs. additional inputs required, years of longevity (e.g., because of better resistance to droughts, diseases, etc.), and ability to create new baby animals (e.g., through natural mating)

*Figure 74: Yields of milk and meat per animal (Source: FAO Stat)*

*2C. Breeds and productivity:* **breed is a critical input for animal productivity and Tanzania's cattle and small ruminant populations are dominated by indigenous breeds (~95% of all animals) with lower overall average milk/meat yields.** Of specialised cattle (just ~5% of all cattle), ~74% are for dairy production, and only 26% are for beef.[101]

**In the poultry value chain, indigenous breeds are not dominant, but they are still widespread, accounting for ~45% of the overall chicken population** (see Figure 75Figure 75).

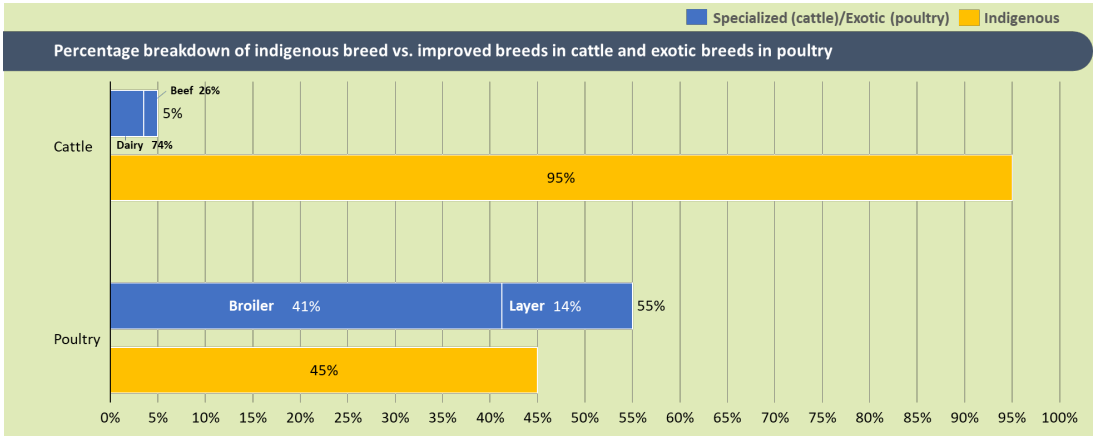



*Figure 75: Breakdown of different types of breeds in cattle and chicken populations*[102]

[101] In the majority of Tanzanian livestock literature, what is referred to in this document as 'specialised' breeds are called 'improved' breeds. In this Master Plan, specialised breeds refer to single-purpose, exotic animals, and improved breeds refer to improved-indigenous breeds. Limited data exists on the distinction between specialised and improved breeds today.

[102] Tanzania Livestock Sector Analysis 2016/2017, TZ Poultry Value Chain Analysis; Study of Poultry Subsector in Tanzania (Kingdom of the Netherlands)

Specialised breeds in the beef/dairy value chains and exotic breeds in the poultry value chain enjoy higher yields than their indigenous counterparts (see *Figure 76*):

- In the cattle value chain, specialised beef demonstrates a significant advantage in terms of live weight (400-800kg compared to 200-250kg for indigenous cattle). This higher live weight translates directly into greater beef yield
- In the dairy value chain, specialised dairy cattle outperform their indigenous peers, yielding 15-20 litres of milk a day compared to 3-5 litres produced by indigenous cattle
- In the poultry value chain, exotic broilers typically yield a live weight of around 2kg compared with 1-1.5kg for indigenous birds and again contributing to higher meat yields. Exotic layers are more productive (250-270 eggs a year) compared with indigenous birds (100-150 eggs a year). This relatively wide range for live weight and egg production in indigenous birds is because of the existence of *improved indigenous birds (*e.g., Kuroiler and Sasso) that have higher yields than their purely indigenous counterparts

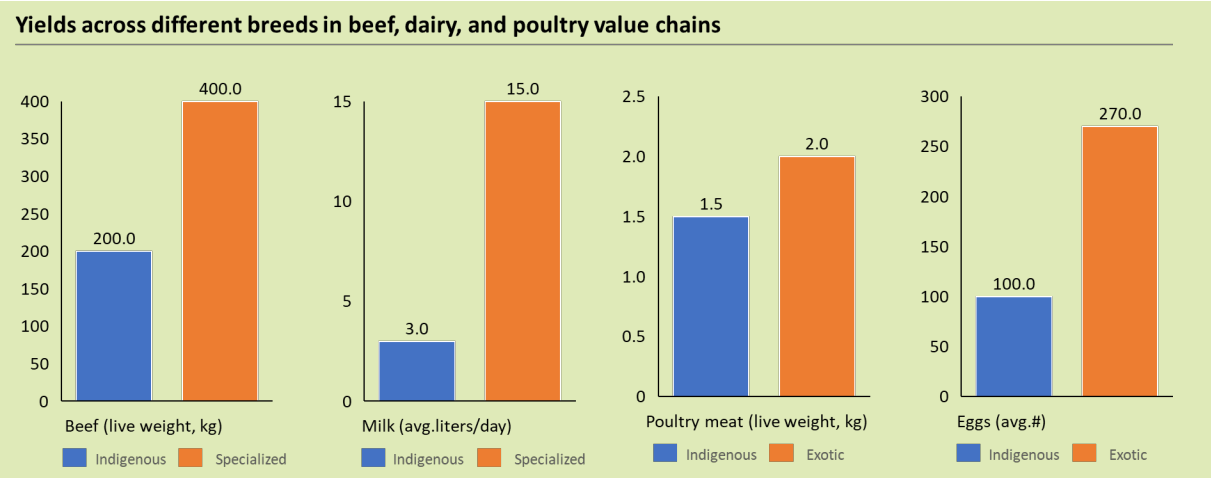



*Figure 76: Yields across different breeds in beef, dairy, and poultry value chains (Sources: Tanzania Livestock Sector Analysis 2016/2017, The Citisen, MLF, TZ Poultry Value Chain Analysis; Study of Poultry Subsector in Tanzania (Kingdom of the Netherlands))*

**While improved cattle and exotic chicken breeds have productivity advantages in terms of meat, milk, and egg yields, it is important to recognise the unique strengths of indigenous breeds**. Indigenous breeds are well-adapted to the specific agro-ecological context of Tanzania and more resistant to disease and drought. Thus, while an increased population of specialised cattle and exotic chickens is crucial for enhancing productivity of the livestock sector, it is equally important to explore opportunities to improve the productivity of indigenous breeds. For example, in particularly dry areas or areas where vaccine coverage is especially low, efforts to improve the genetics of the indigenous breed might be of greater use. Such a dual approach could ensure a balanced and sustainable pathway to livestock farming.

**Livestock opportunity #2: Scale and improve breeding practices**

In each livestock commodity, adopt a dual strategy to enhance breeding practices by increasing specialised, cross-bred, and exotic animals, while simultaneously improving the genetic traits of indigenous breeds:

- Red meat and dairy: scale breeding practices in LMUs, NARCO, and NAIC to increase the number of specialised and cross-bred animals, and strengthen breeding practices to improve the genetics of indigenous animals through TALIRI and community breeding programmes
- Poultry: scale the production of exotic broiler and layer chickens* through commercial players, and strengthen breeding practices to improve genetics of indigenous chickens, with support from TALIRI

**Consider the strong consumer preference for indigenous chicken when deciding how much to scale production of exotic chickens*

*2D. Systems of production:* **A strong correlation exists between the types of breeds and the predominant production systems in the red meat/dairy sector.** In the red meat and dairy sectors, smallholder farmers predominantly raise indigenous breeds under pastoral/agro-pastoralist systems. Conversely, medium to larger scale producers are more likely to raise improved breeds, often on commercial ranches. Pastoralist systems contribute to 2% of all red meat/dairy raising, agro-pastoralist systems make up 95%, and commercial ranching comprises approximately 3% (see Figure 77).

**Predominant systems of production in red meat/ dairy value chains**

| | Pastoralist | Agro-pastoralist | Commercial ranch |
|---|---|---|---|
| **Description** | **Maasai system of cattle/small ruminant rearing largely for subsistence,** characterized by **extensive grazing**, typically on poor soils with insufficient rainfall, or on crop residues | **Traditional system of cattle/small ruminant rearing, alongside crop production, largely for subsistence;** characterized by **less extensive grazing** | **Commercial system of grazing/ feedlots across medium- and large-scale farms,** where improved breeds are raised, solely for meat or solely for milk production |
| **% of all systems** | **2%** | **95%** | **3%** |
| **Typical producer** | **Smallholder farmers** | | **Med.-large scale producers** |
| **Typical breeds raised** | **Indigenous** | | **Specialized** |

*Figure 77: Dominant production systems in red meat and dairy value chains (Sources: MoLF working group)*

**In the poultry value chain, there is less evidence of a correlation between types of breeds and predominant production system:** smallholder farmers raise both indigenous birds under traditional backyard or semi-intensive scavenging systems (including improved indigenous birds such as Kuroiler and Sasso), as well as exotic birds under semi-intensive scavenging and more intensive feeding systems. The predominant poultry meat producers are smallholder farmers, who are collectively responsible for around ~90% of all poultry raising. Medium to larger scale producers opt for exotic breeds, typically managing them through specialised, intensive feeding systems. Commercial intensive feeding systems account for approximately ~10% of all poultry farming.

| Predominant systems of production in poultry value chains | | | |
|---|---|---|---|
| | **Traditional backyard** | **Semi-intensive scavenging** | **Commercial intensive feeding** |
| **Description** | **Backyard systems** of poultry raising, using **traditional extensive scavenging practices with minimal inputs**, apart from occasional supplementary feeding and vaccination against Newcastle Disease | **Semi-intensive, semi-scavenging system** of poultry raising, with **medium inputs** and some attention to biosecurity | **Contained, intensive poultry** raising, using **professional housing, breeding, feeding, and veterinary control systems** and sophisticated biosecurity measures |
| **% of all systems** | **90%** | | **10%** |
| **Typical producer** | **Smallholder farmers** | | **Med.-large scale producers** |
| **Typical breeds raised** | **Indigenous** | **Improved indigenous/ Exotic broiler/ layers** | **Exotic broilers/ layers** |

*Figure 78: Dominant production systems in poultry value chain (Sources: MoLF working group)*

**The systems of production in livestock rearing play a pivotal role in determining overall productivity, encompassing crucial aspects such as feeding practices, vaccination regimes, water availability, and shelter conditions**. The pastoralist/agro-pastoralist systems for red meat and dairy animals are characterised by informal feeding practices, lower water availability, inconsistent vaccination regimes, and minimal shelter, especially during adverse weather conditions. Conversely, the commercial ranching systems are characterised by more consistency in feeding regimes, the use of dietary supplements, vaccination, fattening schemes, and reliable shelter.

In poultry, the traditional backyard and semi-intensive scavenging systems are characterised by minimal supplementary feed and limited attention to biosecurity measures. Conversely, the commercial intensive feeding systems are characterised by consistent feeding practices and vaccination regimes, and proper sheds containing water tanks for the birds.

*2E. Inputs:*

**Improving productivity in livestock rearing relies on a multifaceted approach encompassing four main categories of inputs:**

- Animal health, which involves rigorous disease control measures, vigilant health monitoring, and a well-structured vaccination regime
- Feeding practices, which necessitate an understanding of nutritional requirements and the provision of high-quality, safe feed
- Breed type and genetics, where strategic selection of breeds and the implementation of genetic improvement programmes contribute to desired traits in the herd
- Animal management practices, which include shelter and daily caretaking

This section will focus on inputs in the first three categories. The use of different animal management practices are covered under the previous section relating to systems of production.

Animal health: **Disease prevalence and mortality rates across cattle and poultry birds in Tanzania are high, largely due to vaccine deficits and inconsistent disease control**

**practices.** There is an estimated deficit of 776 million vaccine doses/year across all livestock today (see Figure 79). While it is difficult to determine overall mortality rates due to inconsistent vaccine regimes and haphazard outbreaks, the mortality of indigenous calves is around ~25%, and the mortality rate of indigenous chickens is around ~50%.[103,104] The calf mortality rate in Tanzania is lower than in neighbours such as Ethiopia, where mortality rates are closer to 31%.[105] However, the indigenous chicken mortality rate in Tanzania is higher than in Ethiopia, where the overall mortality rate of backyard chickens is estimated at ~32%.[106]

Specifically for cattle, the main diseases include (but are not limited to), foot and mouth disease, contagious bovine pleuropneumonia (CBPP), lumpy skin disease, East Coast fever, and anthrax. An estimated 70% vaccine coverage rate is required to prevent a disease outbreak amongst cattle, but it stands at only ~35% and 65% for indigenous and specialised cattle, respectively. For small ruminants, the priority diseases include (but are not limited to): contagious caprine pleuropneumonia (CCPP) and peste des petits ruminants (PPR). Current vaccine coverage rates amongst small ruminants are less clear. For poultry, the priority diseases include (but are not limited to): Newcastle disease, avian influenza, and anthrax. Given that diseases can sometimes spread much more rapidly amongst poultry, recommended coverage rates are higher (~95%-100%) but current vaccine coverage amongst indigenous chickens is only ~50%.

Feeding practices: **The current disparity between demand and production of fodder for cattle and small ruminants, as well as that relating to poultry feed, poses significant challenges in meeting livestock's nutritional requirements.** Fodder production, with an estimated demand of approximately 147 million tonnes, falls short with only 110 million tonnes being produced today. This discrepancy is largely attributed to the limited use of supplementary feed by smallholders, stemming both from low availability and insufficient knowledge about fodder production. In the case of poultry feed, demand stands at around 2 million tonnes annually (across indigenous chickens, layers, and broilers), whereas production lags at 800 thousand tonnes (see Figure 79). Given that feed constitutes a substantial 70% of overall poultry-raising costs, many smallholders resort to homemade feed production using local materials, often compromising feed quality. Furthermore, the primary raw materials for commercial feed — maize, soya, and sunflower seed cake — face productivity challenges and compete with human consumption needs, exacerbating the feed supply-demand gap. This limited supply of commercial feed also amplifies the difficulties of scaling commercial poultry meat production.

Breeds and genetics: **Overall, breeding practice standards are suboptimal, given limited availability of parent stock and limited availability/uptake of artificial insemination (AI) services.** In the case of formalised natural breeding, the availability of high-quality parent stock for beef and dairy cattle breeding is reportedly low, although the exact number remains unknown. Informal livestock breeding, characterised by haphazard mating, is further hindered by the lack of registration and identification of animals. On the artificial insemination front, the National Artificial Insemination Centre (NAIC) serves as the primary Government body

[103] Interview with Dr. Emmanuel Nonga, Director of Veterinary Services,

[104] TZ Poultry Value Chain Analysis (ECI Africa, April 2022).

[105] Reducing Calf Mortality in Ethiopia (NBCI, August 2022).

[106] Epidemiological investigation of morbidity and mortality of improved breeds of chickens in small holder poultry farms in selected districts of Sidama Region, Ethiopia

responsible for semen production for AI services. However, the overall quality of AI services is compromised by issues such as poor semen storage and insufficient technical expertise. Furthermore, farmer reluctance to adopt AI, primarily stemming from unawareness of potential benefits and concerns that AI could harm the animals, contributes to a reduced demand for these services.

Government entities, specifically the Livestock Multiplication Units (LMUs) and the National Ranching Company Limited (NARCO), play key roles in breeding, respectively, specialised and improved dairy and beef cattle. While both entities predominantly employ AI for breeding, some natural breeding methods are also utilised for multiplication purposes. However, the current capacity of these units is constrained, partly due to the limited availability of high-quality semen.

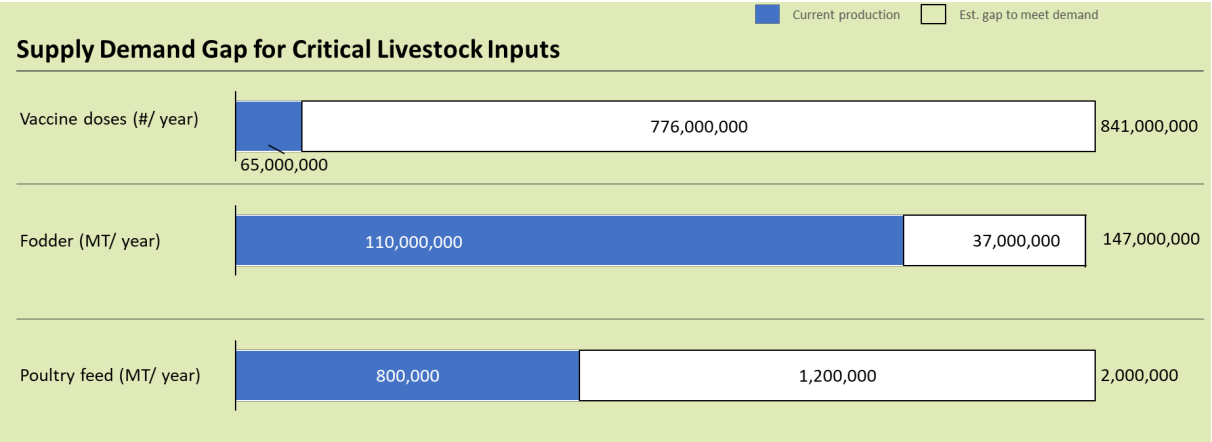



*Figure 79: Estimated supply-demand gap for vaccines, fodder, and poultry feed (sources: expert interviews, the Citizen, TZ Poultry Value Chain Analysis, Livestock Sector Transformation Plan 2022/23-2026/27 )*

**Livestock opportunity #3: Scale commercial fodder/poultry feed production**

Scale production of fodder/feeds across each prioritised livestock commodity to improve meat, milk, and egg yields per animal.

- Red meat and dairy animals: increase commercial fodder production* (including silage and hay), to close the estimated gap of ~37 million tonnes of fodder a year. Production can take a dual approach of smallholder farmer-led and commercial production
- Poultry: boost the productivity of key poultry feed crops like maize, soybeans, sunflower, and wheat and then scale blending processes to meet the approximately 1.2 million tonnes/year deficit in poultry feed production

**Commercial pasture production is addressed separately in Opportunity #1, but is included in the target of 37 million tonnes of additional fodder production required per year*

**Livestock opportunity #4: Boost domestic vaccine production for priority diseases**

Acquire certification and increase infrastructure and human capacity to produce vaccines for priority livestock diseases that are not yet being produced today* (e.g., East Coast fever and foot and mouth disease).

**Only 7 out of 13 critical diseases are covered by vaccine production at Tanzania Veterinary Laboratory Agency (TVLA), and ~60-70% of total vaccines are imported* [107]

2F. *Cost of animal rearing compared with regional peers*: **When comparing production costs across the dairy and poultry value chains, Tanzania demonstrates a competitive advantage over regional peers, particularly Kenya.**[108] The cost of producing one litre of milk and raising one chicken is lower in Tanzania than in Kenya, by ~50% and ~18% respectively. This cost efficiency positions Tanzania favourably for boosting production in both the dairy and poultry sectors. However, despite its lower production costs, Tanzania is among Kenya's top export destinations for both milk and poultry meat. This is largely because milk and poultry processing levels are much higher in Kenya (e.g., for yoghurts, cheeses, and chilled poultry meat), leading to greater availability of processed products sourced from there. Additionally, in the case of milk, where the cost of production is similar between Tanzania and Uganda, Kenya's primary import market is Uganda. These trade dynamics suggest that factors beyond production costs, such as market demand, trade agreements, and distribution networks, play substantial roles in shaping the regional trade patterns for dairy and poultry products.

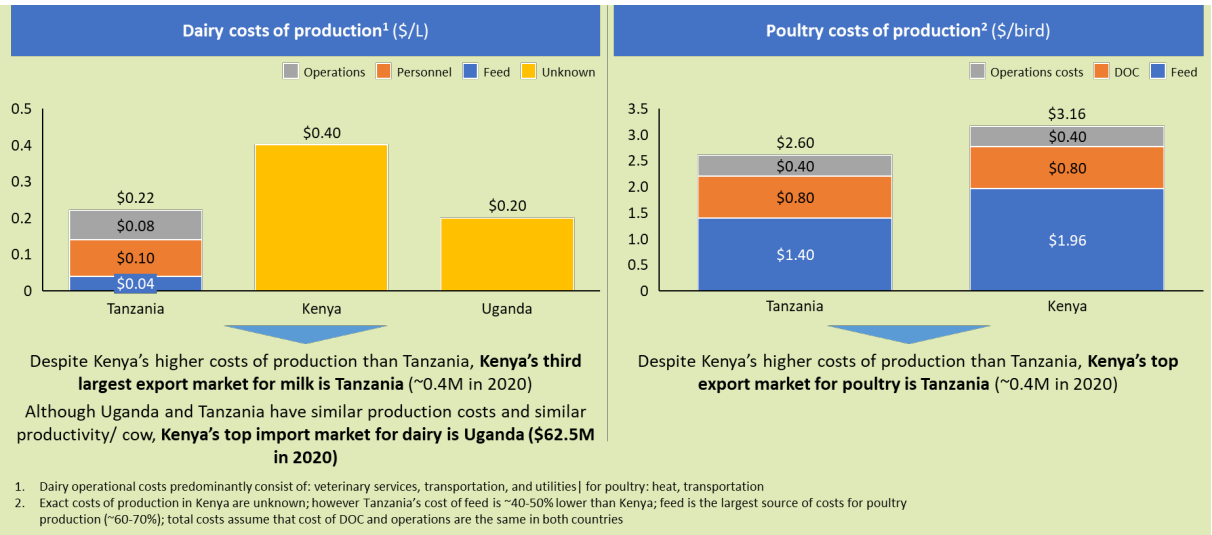



*Figure 80: Dairy and poultry costs of production vs. regional peers (Sources: expert interviews, Analysis of Marketing Performance of the Dairy Value Chain in Tanga city, Tanzania, Poultry World, Daily News)*

## ***3. Added value***

*3A. Processed products:* **Low levels of processing across the poultry, red meat, milk, and hides and skins value chains pose a significant challenge to maximising the potential of the livestock sector in Tanzania**.[109] In particular, less than 10% of poultry meat, less than 5% of red meat and milk, and just 10% of hides and skins are processed. For comparison, processing levels in Kenya are ~30%, 20%, and 15% for poultry, dairy, and beef respectively (see Figure 81). While facilities for additional processing in certain value chains such as dairy

[107] Livestock Sector Transformation Plan 2022/2023- 2026/2027

[108] Data for producing 1 kg of red meat was unavailable

[109] Processing encompasses products such as new cuts, chilled meats, pasteurized milk, and different end-products such as sausages, yoghurts, and cheeses

are available, utilisation is low: on average, dairy processing facilities are operating at around ~40% capacity.

**The primary reasons for low processing levels are limited demand for processed products, a lack of cold chain infrastructure and the low level of volumes from offtake.** Tanzanian consumer preferences tend to favour fresh, 'warm' meat recently slaughtered, and boiled milk at home, as opposed to pasteurised milk or processed meats. The widespread scarcity of refrigerators further hampers the storage and consumption of processed products. Finally, limited viable production volumes being available for offtake to processors results in lower levels of processing. Low production volumes in dairy, for instance, do not incentivise farmers to bring milk to collection centres, leading them to either consume the milk at home or sell it to their neighbours.

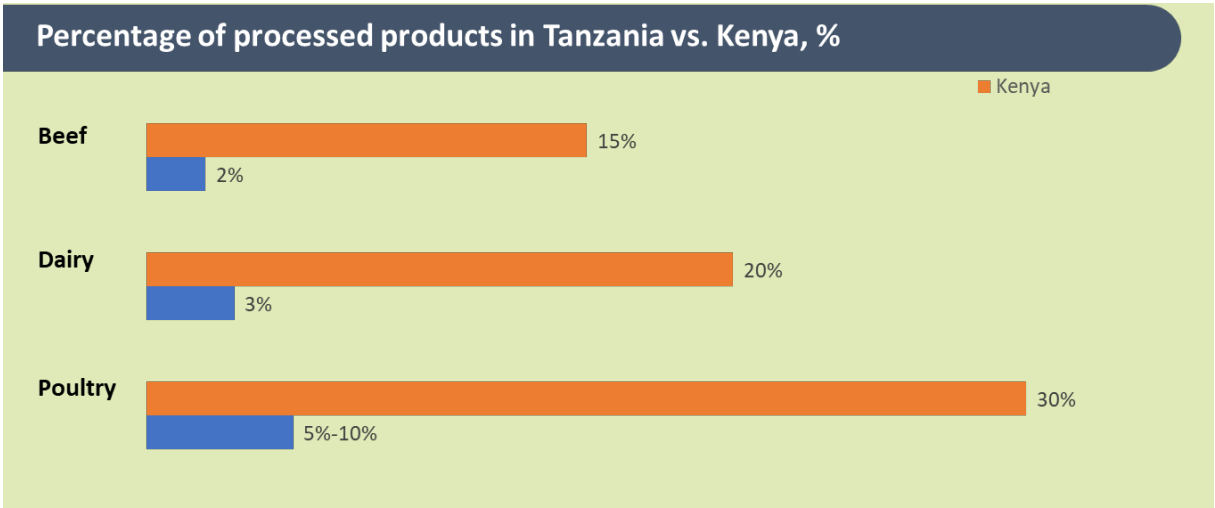



*Figure 81: Percentage of processed products in Tanzania vs. Kenya*

**Additionally, hides and skins present a substantial opportunity for processing into leather, given Tanzania's sizeable cattle and small ruminant populations.** However, most hides and skins are lost before collection due to poor quality and preservation practices. Furthermore, more than 90% of collected hides and skins are not processed into leather, primarily due to a lack of machinery and the associated high production costs (exported as raw hide or wet-blue).

**Livestock opportunity #5: Boost processing levels across key livestock commodities**

Increase processing levels of dairy, red meat, poultry, and hides and skins to extract greater value from raw materials:

- Dairy: encourage efforts to increase milk collection, increase cooling tank capacity of existing collection centres with large dairy cattle populations, and promote consumption of pasteurised milk
- Red meat: improve red meat quality for existing processing industries (e.g., via fattening services), and incentivise investment in new red meat processing facilities

- Poultry: promote consumption of chilled/frozen products, and incentivise investment into new poultry processing facilities
- Hides and skins: train smallholders in improved animal management practices, increase collection levels of raw hides and skins, and promote greater hygiene and safety in existing abattoirs

### 4. *Marketing*

4A. *Production compared with consumption (including imports and exports):* **Tanzania has a relatively small production-consumption gap across the poultry, dairy, and beef value chains. It is a net importer of poultry meat and dairy products, and a modest net exporter of beef.** Specifically, Tanzania imports around 2,700 tonnes of poultry meat and approximately 11.6 million litres of milk to meet domestic consumption needs. Conversely, it exports approximately 330 tonnes of beef. The goat meat and mutton value chains stand out as Tanzania's largest livestock export commodities, with around 14,000 tonnes exported in 2023, primarily to the Middle East.

**Despite clear export potential, there are underutilised opportunities across all value chains.** Key export barriers include international price competition, traceability issues, and concerns related to meat quality. In the beef value chain, for instance, the price of beef from Pakistan is significantly lower — by more than 50% per kilogram — than that of Tanzania. Additionally, markets in the US and EU demand stringent quality and traceability measures, which have not been implemented at scale in Tanzania. Most of the high-end beef for supermarkets and hotels in Tanzania is imported.

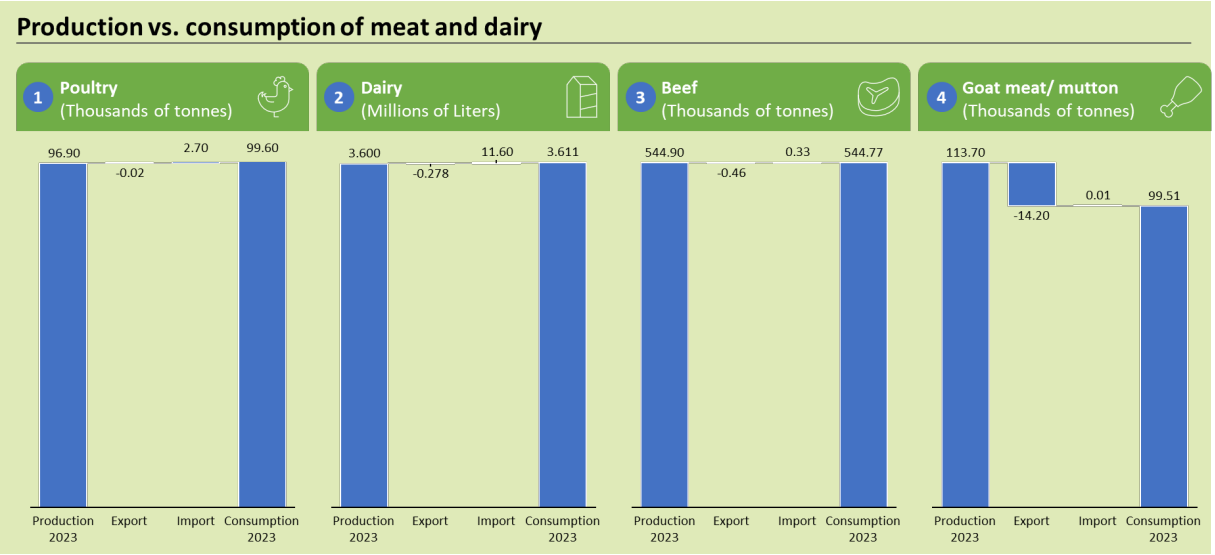



*Figure 82: Production vs. Consumption of meat and dairy, including imports and exports (Sources: Tanzania Meat Board, Tanzania Dairy Board, OECD Database)*

**Livestock opportunity #6: Increase exports of key commodities, beginning with commodities where production is already above consumption**

- Beef: promote higher beef quality for domestic niche markets and export markets (e.g., via high quality animal management practices, fattening services, and animal traceability for specific import markets)

- Goat and mutton: increase goat meat/mutton production and quality for export markets, given that Tanzania is already a leading exporter of these products. Demand for red meat is expected to grow annually by ~2% until 2030 across the Middle East (largest importer of Tanzanian goat meat/mutton) [110]

4B. *Systems of market access:* **Market access strategies for smallholders vary across different value chains, broadly categorised into three systems: contract farming, communal marketing, and individual farmer sales.** Contract farming, involving prearranged agreements between farmers and buyers with guaranteed offtake, is most common in poultry production. However, this system remains relatively uncommon, with only about 5-10% of smallholder poultry farmers participating in contracting schemes. Communal marketing, where smallholders pool their products for collective market access, is prevalent in milk production. Approximately 260 milk collection centres nationwide serve as key hubs for aggregating milk production and supplying processors. Meanwhile, individual farmer sales are widespread across all livestock value chains, notably among red meat animal producers. Pastoralists and agro-pastoralists commonly opt for individual sales to cattle and small ruminant traders or wholesalers rather than engaging in contract farming or participating in communal marketing schemes.

## II. Opportunities

As a consequence of the full diagnostic of Tanzania's livestock sector, six opportunities across all livestock value chains were identified, as well as four commodity-specific opportunities, summarised below.

**Opportunities across the value chain**

Based on diagnostic findings, six opportunities that apply across livestock value chains can be identified:

**Summary of livestock opportunities:**

1. **Scale commercial pasture production and improve water availability** for livestock
2. **Scale and improve breeding practices**
3. **Scale commercial fodder/poultry feed production**
4. **Boost domestic vaccine production** for priority diseases
5. **Boost processing levels** across key livestock commodities
6. **Increase exports of key commodities,** beginning with commodities where production already exceeds consumption

*Figure 83: Value chain opportunities across the livestock sector*

[110] Global Newswire- Middle East Edible Meat Market

## Commodity-specific opportunities

**The selection of livestock commodities for commodity-specific opportunities is guided by five criteria common across sectors** — crops, livestock, and fisheries. These criteria include contribution to agricultural GDP, growth potential, the capacity for smallholder farmers to drive transformation, resilience and sustainability, and the potential to enhance dietary quality (see Figure 84).

**Criteria used to prioritize livestock commodities for Master Plan**

| | | | |
|---|---|---|---|
| 1 | GDP | Share of ag. GDP | Contribution to overall agriculture GDP, % |
| 2 | Smallholders | Employment | Number of households owning livestock in the specific value chain, # Millions |
| 3 | High growth potential | Consumption | Contribution to daily per capita energy in the Tanzanian diet by meat product, % |
| | | Exports | Thousands of tons exports, # |
| 4 | Resilience & sustainability | Feed Conversion Ratio | Units of feed required to produce one unit of meat or milk, kg feed: kg produced |
| | | Carbon emissions | Carbon emissions per unit of meat or milk produced, kgCO2-eq/ kg produced |
| 5 | Better diet | Nutritional quality | Overall level of nutrition considering protein, fat, vitamin and mineral content |

*Figure 84: Criteria to prioritise livestock commodities*

Results from the commodities prioritisation exercise are as shown below:

High Med. Low Prioritized for opportunities

| | GDP | Smallholders | Growth potential | | Sustainability | | Better diet |
|---|---|---|---|---|---|---|---|
| | Contribution to Ag. GDP | Employm-ent | Consump-tion | Exports | Feed conversion ratio | Carbon emissions | Nutritional quality |
| Poultry | 6% | 4.2 | 10-12% | .002 | 4.5 : 1 | 57 | High |
| Dairy | 7.6% | N/A | N/A | 0.28* | 1 : 1.6 | 95 | High |
| Beef | 11.1% | 1.9 | 60-65% | 0.45 | 25 : 1 | 150-500[1] | Medium |
| Goat meat/mutton | 2% | 1.7 | 12-15% | 113 | 12 : 1 | 200 | Medium |
| Pig | 1% | 0.5 | 5-11% | .002 | 9.4 : 1 | 76 | Medium |

*Millions of litres

*Figure 85: Prioritised livestock commodities*

**Based on these criteria, poultry is a prioritised commodity, notably excelling on sustainability and inclusivity**. Poultry's feed conversion ratio (FCR) is more than 80% lower than that of beef and emits only about 25% of the carbon emissions produced by small ruminant production. Furthermore, poultry raising, being often based in households, is more open to women. Despite contributing only a fifth of livestock GDP, poultry engages the largest number of households in the sector, totalling 2.4 million. Poultry's overall nutrition quality is also high relative to other animal proteins, being low in fat but rich in Vitamin B6.

**Dairy also stands out for similar reasons to poultry**. The sustainability of dairy production, measured solely by FCR, outperforms all other value chains. Moreover, dairy is recognised for its higher inclusivity of women, compared to the rearing of beef cattle and small ruminants. While milk has an overall lower protein count than most meats, it is a critical source of calcium and other essential nutrients (e.g., phosphorus, zinc, and magnesium).

**Despite being one of the most climate-intensive value chains, both in FCR and carbon emissions, beef takes precedence as the largest contributor to Tanzania's livestock GDP**, surpassing 40%. It holds a crucial place in the Tanzanian diet, constituting approximately 60% of all energy from animal meats. Tanzania boasts the second-largest population of cattle on the continent, with approximately 35.3 million beef cattle.

**Although goat meat/mutton production is particularly carbon-intensive, goat meat/mutton are the dominant export commodities in the livestock sector**, constituting ~96% of all exports. Moreover, meat from small ruminants holds a larger share in the Tanzanian diet compared to poultry or pork.

**Finally, after completing the diagnostic exercise, fodder was elevated as a key commodity, given the strong demand for scaling fodder production nationwide, and its high tradability potential.**[111] Fodder production is currently a very small contributor to Tanzania's GDP, but it has high growth potential and represents a promising opportunity to employ millions of smallholders. Scaling fodder production can be achieved using climate-smart agriculture practices, including pasture rotation and adequate time for grass regrowth.

*Note: To simplify the identification of commodity-specific opportunities, beef and goat meat/mutton are grouped into one commodity below, 'red meat'.*

| | | Criteria | | | | | |
|---|---|---|---|---|---|---|---|
| | Commodities | Share of ag. GDP, % | High growth potential | Small-holders | Resilience & sustai-nability | Better Diet | Region |
| Animal protein | Poultry | 6.1% | ✓ | ✓ | ✓ | ✓ | All |
| | Red meat | 11.1% | | ✓ | | | Tabora, Manyara, Arusha, Simiyu, Kagera, Mara |
| | Dairy | 7.6% | ✓ | ✓ | ✓ | ✓ | Tanga, Arusha, Mwanza, Mbeya, Morogoro, Kilimanjaro |
| | Fodder | <0.1% | ✓ | ✓ | ✓ | | Tabora, Tanga, Manyara, Arusha, Simiyu, Kagera, Mwanza, Mbeya, Morogoro, Kilimanjaro, Mara, Kagera |

[111] Fodder includes all roughages (both wet and dry), including raw materials for pasture, silage, haylage, and hay

## E. Fisheries sector

### I. Situation

**The role of the fisheries sector in Tanzania's economy**

**The fisheries sector in Tanzania is comprised of capture fisheries and aquaculture**. Tanzania is one of the largest fishing nations in Africa, ranking in the **top 10 countries** on the continent in terms of total capture fish production. Current per capita fish consumption is 8.5 kg per year and contributes 30% of daily animal protein intake. It also contributes 6.07% of agricultural GDP and provides direct employment to 195,000 fishers and 30,000 aquafarmers. In addition, about 4.5 million people (6.89% of total population) are employed indirectly in various ancillary activities along the two value chains.

# Diagnostic fisheries

Fisheries · Capture fisheries · Aquaculture · Protected areas

## 1 Water management

**1a** **Increase of catch fisheries by 3.4% p.a. and aquaculture by 18.5% p.a. since 2011**

**1b** **Over-exploitation of ecosystems mainly due:**

- **Illegal fishing practices** (e.g., dynamite) and **46% of vessels[1] being illegal**
- **Insufficient Monitoring, Control and Surveillance**

**1c** **~30k earthen ponds, ~993 cages** compared to **land suitable for aquaculture** (i.e., ~58km2 for fresh and ~64k km2 for marine)

**Marine Parks and Reserves Units (MPRU)** managing **marine protected areas**

## 2 Production

**2a** **~490 ktons produced in 2021,** capture fisheries production: 96% and aquaculture: 4%

**2b** **~470 ktons produced, 95% by small-scale fishers, 5% by large companies,** e.g., Alphacrust

~82% in fresh (main species: **Nile perch**) vs ~18% in marine water (main species: **tuna-like**)

**Few motorized boats** (~27%) even though they harvest 2x more than paddle boats (~37 kg/ boat/ day vs ~20).
**49 commercial vessels in EEZ** with only **one** being Tanzanian

**2c** Prod. from **220 t in 2000 to ~19 kt in 2020**

**~90% in fresh** vs **~10% in marine water** (main species: nile tilapia) ; **95% in ponds** (vs 45% in Uganda) and **5% in cages**

Prod. cost of 2.2-2.4 USD/ kg of Tilapia vs 1.49 in Kenya due to **limited input access:**

- **Limited supply, poor-quality and elevated prices of feeds[2]** (70% of cost)
- **Shortage of fingerlings,** esp. for mariculture

## 3 Value addition

**3** **Artisanal processing:**

- **10-40% post harvest losses** (mainly for dagaa) due to **limited improved landing sites and poor equipment** (drying racks)
- **Limited storage, cold chain facilities** and only a **few value addition methods** used

**Export processing:**

- **High potential** (e.g., Nile perch filet is ~40% more valuable than raw)
- **17 facilities[3] with only ~50%** of Nile perch fileting processing facilities **capacity** used due to shortage of raw materials[4]

## 4 Market access

**4** **~90% of the production sold domestically, ~10% exported** (Nile Perch, dagaa) and **~2% of production imported**

Access to market usually **informal** through a **middleman** selling either to **MSME distributors or processors**

**Demand gap of 400-450k+ tons** of fish in Tanzania, with **90 to 266 million ha of land needed** to close it on top of **growing continental demand**

1. Non-licensed vessels in 2022
2. I.e., ~1000 tons of fish feed produced in 2020 vs target of 2,500 in 2025
3. In Mwanza 11/12 processing plants, only 9/10 operational compared to ~20 in Uganda
4. E.g., more than 50% of Nile perch smaller than 50 cm thus not compliant for exports

Source: Working sessions with members of Ministry of Livestock and Fisheries ; Fisheries sector Master Plan

## 1. Water management:

**As illustrated in** Figure 86**, the practice of fish farming is more widespread in specific regions, with the highest number of households involved in areas such as Ruvuma and Mwanza.** This suggests that fish farming is an important economic activity in regions with significant water resources. Figure 87 illustrates that since 2011, catch fisheries have experienced an annual growth rate of 3.4%, while aquaculture has surged at a significantly higher rate of 18.5% per annum:

- **Capture fisheries**: the growth pace of the subsector has decreased for more than ten years, mainly due to over-exploitation of ecosystems through illegal fishing practices (e.g., blast/dynamites fishing, monofilament, beach seine, illegal gears) with 46% of vessels being illegal.[112] There is insufficient monitoring, control, and surveillance (MCS)

- **Aquaculture**: there are ~30,000 earthen ponds and ~993 cages, which is low compared to the extent of land suitable for aquaculture, including approximately 58 square kilometres for freshwater and 64,000 square kilometres for marine areas

- **Protected areas**: the Marine Parks and Reserves Unit (MPRU) is responsible for establishing and managing marine protected areas (MPAs) in mainland Tanzania. MPAs are divided into two categories, namely marine parks (multiple use areas) and marine reserves (39 no-take areas in which extractive use is strictly prohibited). At present, there are three marine parks, namely Mafia Island Marine Park, Mnazi Bay–Ruvuma Estuary Marine Park, and Tanga Coelacanth Marine Park. There are 15 marine reserves, including Mbudya, Bongoyo, Sinda, Pangavini, Fungu Yasini, Mwakatumbe, and Kendwa in Dar es Salaam, Maziwe, Kwale, Kirui, Mwewe, and Ulenge in Tanga, and Mbarakuni, Nyororo, and Shungimbili in Mafia. Work must be done to place at least 30% of critical habitats under protection by 2030 to meet international obligations, including the United Nations Sustainable Development Goals ratified by Tanzania. **Breeding areas in freshwaters** also **need protection** given that they provide over 80% of fish production.

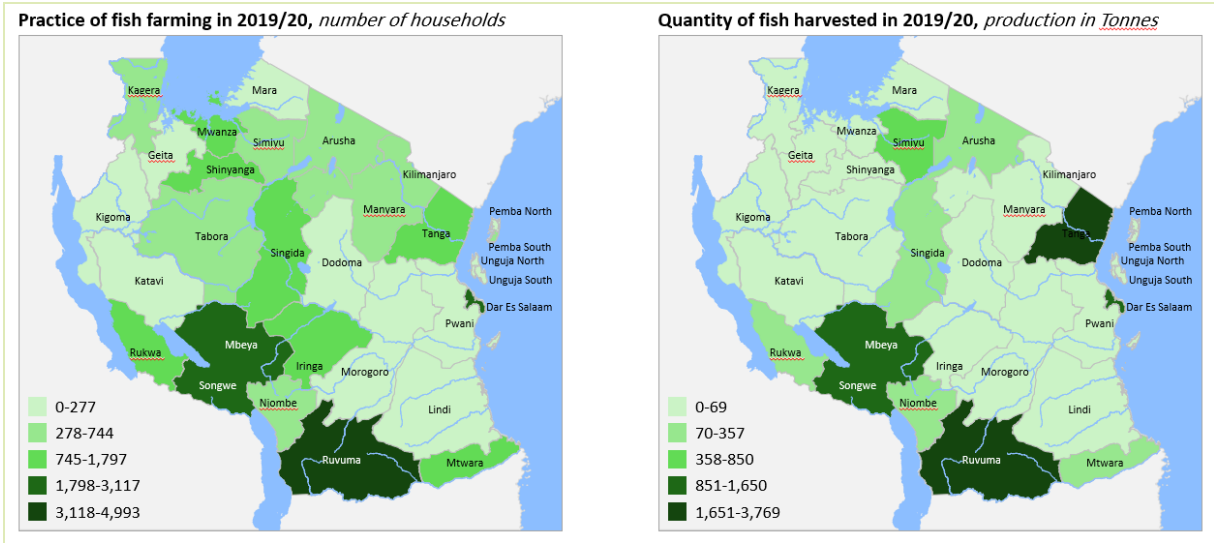



*Figure 86: Practice of fish farming by region in Tanzania*

[112] Non-licensed vessels in 2022

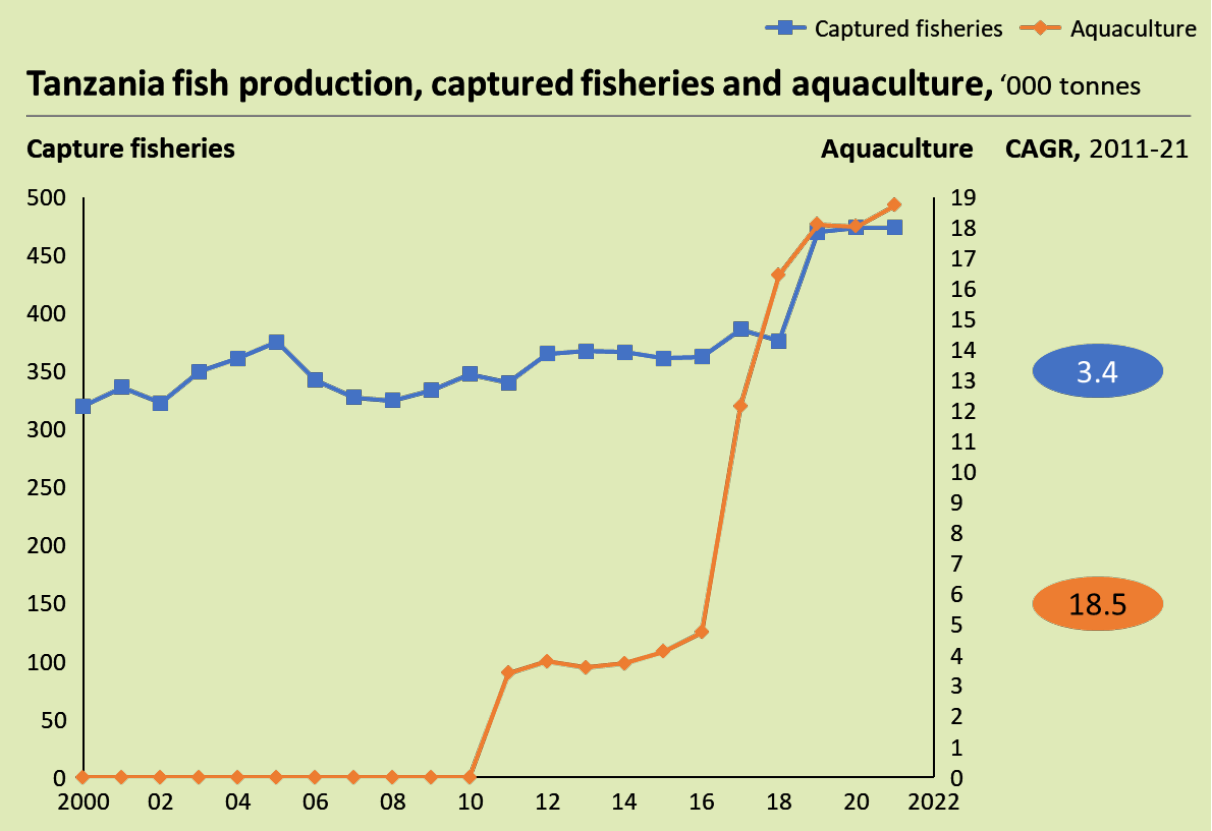



*Figure 87: Evolution of Tanzania fish production*

**Fisheries opportunity #1: Ensure effective management of fisheries stocks by reinforcing monitoring, control and surveillance:**

- **Design and strengthen the implementation of policies** to limit destructive fishing practices (e.g., breeding seasons)
- **Establish and implement a stronger enforcement mechanism system** for monitoring, controlling and surveillance (MCS) of fish stock

**2. Production and productivity:**

**As shown in** Figure 88**, 2021 production was 490,000 tonnes, with capture fisheries accounting for 96% and aquaculture for 4%.**

**Capture fisheries**: despite comprising the majority of fish production, increase in production from capture fisheries has slowed down over the past ~13 years (3.4% p.a. since 2011). Production accounted for 470,000 tonnes in 2023, with 95% of the total produced by small-scale fishers, while large companies, such as Alpha Crust, produced 5%. The production predominantly came from freshwater sources, accounting for 82% of all production, with a few prevalent species, such as the Nile perch comprising the majority of production. Contrarily, production from marine water accounted for just 18%, principally consisting of species such as tuna and tuna-like fish. There are two categories of landing sites used to unload catches from fishing vessels: (i) those that handle fish for domestic consumption and (ii) upgraded sites designed to handle fish for processing factories. Capture fisheries have different zones, including territorial waters (0-12 nautical miles) with high control, deep sea, and an Exclusive Economic Zone (EEZ):

- Territorial waters: although motorised boats harvest twice as much as paddle boats (~37 kg per boat per day compared to ~20 kg), only around a third of boats are motorised
- Deep sea fishing: Zanzibar and Tanzania mainland share the management of deep sea fishing (fisheries located beyond 12 nautical miles)
- Exclusive Economic Zone (EEZ): the management of Tanzania's EEZ fishing is under the mandate of the Deep-Sea Fishing Authority (DSFA). There are 49 commercial vessels licensed in the EEZ, with only one owned by a Tanzanian stakeholder

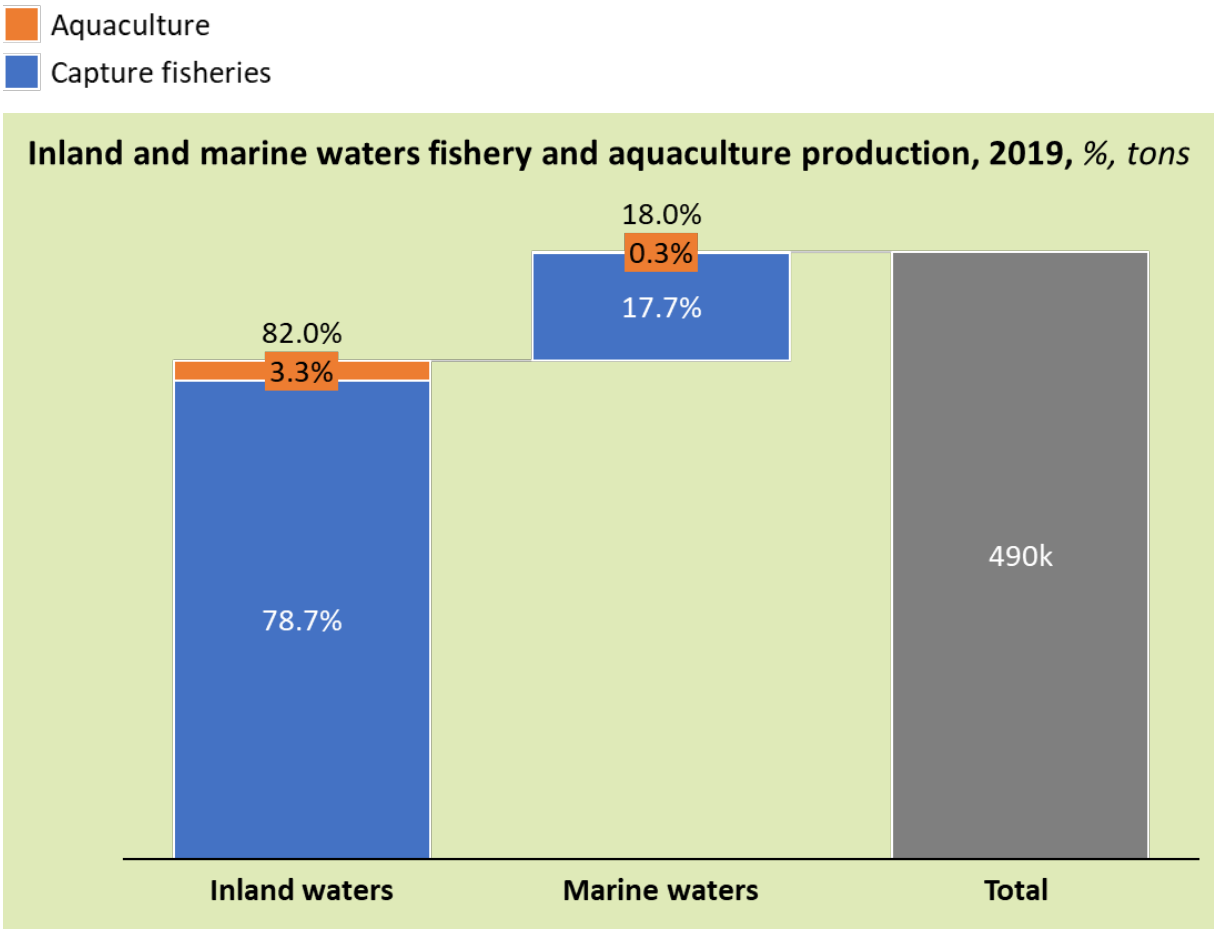



*Figure 88: Inland and marine waters fishery and aquaculture production*

**Aquaculture**: Although fish production from aquaculture is lower than that of capture fisheries the potential growth for aquaculture is high. Production increased from 220 tonnes in 2000 to approximately 19,000 tonnes in 2020, with around 90% of this production occurring in fresh water and about 10% in marine water. **86% of species** are **finfish** (i.e., 95% tilapia and 5% catfish and milkfish), **13%** are **seaweed**, **1% is crab, sea cucumber and prawn.** There are **two main aquaculture farming systems** (i.e., pond and cages) and 95% of production takes place in ponds compared to 45% in Uganda. The remaining 5% is produced in cages. However, there is emergence of **intensive commercial aquaculture** (i.e., intensive pond/tank culture, recirculation aquaculture systems (RAS) and in-pond raceways) in urban and peri-urban areas in response to growing demand for fresh fish driven by rapid population growth. The production cost of tilapia is estimated to be between US$2.20-2.40 a kilo, which is higher compared to the US$1.49 it costs in Kenya. This higher cost is attributed to limited access to quality inputs:

- **Feed**: there is a limited supply of feed, often of poor quality, and it is highly priced. Feed costs constitute approximately 70% of total production cost. Current availability of feed is ~6,000 tonnes (~2,700 metric tonnes produced by ten local small and medium scale fish feed plants and ~3,500 metric tonnes imported by ten feed importers) while total demand is estimated at ~26,000 tonnes.

- **Fingerlings**: there is a notable shortage of fingerlings, especially for mariculture (marine aquaculture), which impacts production efficiency and costs. Currently there are 38 hatcheries (31 private sector, 4 parastatals and 3 Government) with a capacity to produce over 50 million fingerlings a year against estimated demand of 120 million

- Other challenges include **inadequate technical knowledge and business skills among farmers and unreliable access to financial capital.** Knowledge and skills among farmers could be improved if there were sufficient extension agents (i.e., one extension officer in each of the 186 districts)

**Fisheries opportunity #2: Enhance access to inputs for capture fisheries and aquaculture (feed and fingerlings) to allow sustainable intensification and expansion**

- **Capture fisheries:** improve access to affordable, high-quality gears and boats to improve smallholder productivity
- **Aquaculture:** improve access to feed and fingerlings by rehabilitating and leasing existing Government facilities (e.g., hatcheries cages and associated technology, including both marine and feed mill) to commercial players through public-private partnership (PPP) arrangements

**3. Added value:**

**Within fisheries, there are two types of processing: artisanal processing (generally on landing sites), and export-oriented commercial processing.** Export of fish and other fishery products in Tanzania is mainly in fresh/chilled and frozen states. Some sun dried and smoked fish are also exported to neighbouring countries. Sun drying is the main technique used for processing sardines. New opportunities for added value include canning.

As shown in Figure 89, for artisanal processing, **post-harvest losses could be as high as 50% under certain conditions, but typically range between 10% - 40%**, mainly for dagaa (due to limited improved landing sites, insufficient drying racks and other equipment issues). More than 80% of post-harvest losses are attributable to **quality issues** centred around storage and handling/processing. As to storage, there are only 90 storage facilities and 52 cold rooms. Concerning handling and processing, **artisanal processing sites are usually poorly equipped**.

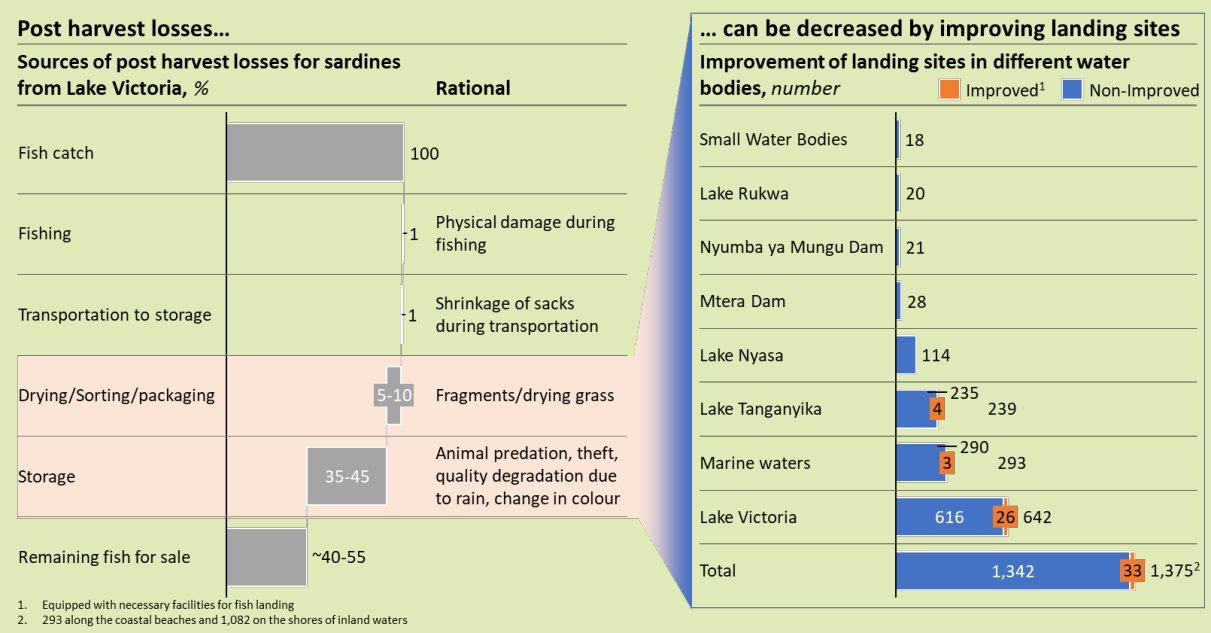



*Figure 89: Sources of post harvest loss in fisheries for sardines from Lake Victoria*

Commercial processing is mainly for export markets. There are 17 fish factories in the country (11 along Lake Victoria, 5 in the coastal area and 1 along Lake Tanganyika). Although Nile perch fillet is ~40% more valuable than raw fish, Nile perch processing facilities operate at ~50% of their capacity, mainly due to a shortage of raw materials.

**Fisheries opportunity #3: Reduce post-harvest losses to increase fish quantities available for processing**

Reduce post-harvest losses by increasing storage and cold chain facilities, upgrading fish handling infrastructure (e.g., landing sites), and adopting innovative preservation techniques, including for dagaa. Addressing post-harvest losses presents an opportunity to increase production by roughly 20,000 tonnes.

**Fisheries opportunity #4: Improve overall processing levels (both for domestic consumption and export), with an added focus on seaweed:**

- Plant utilisation: increase capacity utilisation of local fish processing plants (currently <50% utilisation on average)
- Seaweed processing: increase seaweed processing for export, given that Tanzania produces 92% of all the seaweed in Africa (the continent's top producer)

## 4. Market access

**About 90% of fish production is consumed domestically, while approximately 10% is exported, mainly species like Nile Perch and dagaa.** Additionally, around 2% of fish products are imported. The infrastructure for export includes one main fish harbour and a further harbour in Kilwa Lindi which is under construction. Moreover, there are five fish markets (two modern international fish markets located in Dar es Salaam and Mwanza and three others currently undergoing upgrades). While the Tanzania Bureau of Standards is responsible for ensuring export quality, there are known challenges in adhering to standards, particularly for products like fried sardines. This situation is compounded by a substantial demand gap,

estimated between 400,000 to 450,000 tonnes, highlighting a significant potential for industry growth and improvement in regulatory compliance.

**As illustrated by** Figure 90**, regional fish trade from Tanzania is mainly conducted informally by small traders.** Market access predominantly operates through informal channels, involving intermediaries who facilitate sales to micro, small, and medium enterprises (MSMEs) and processors.

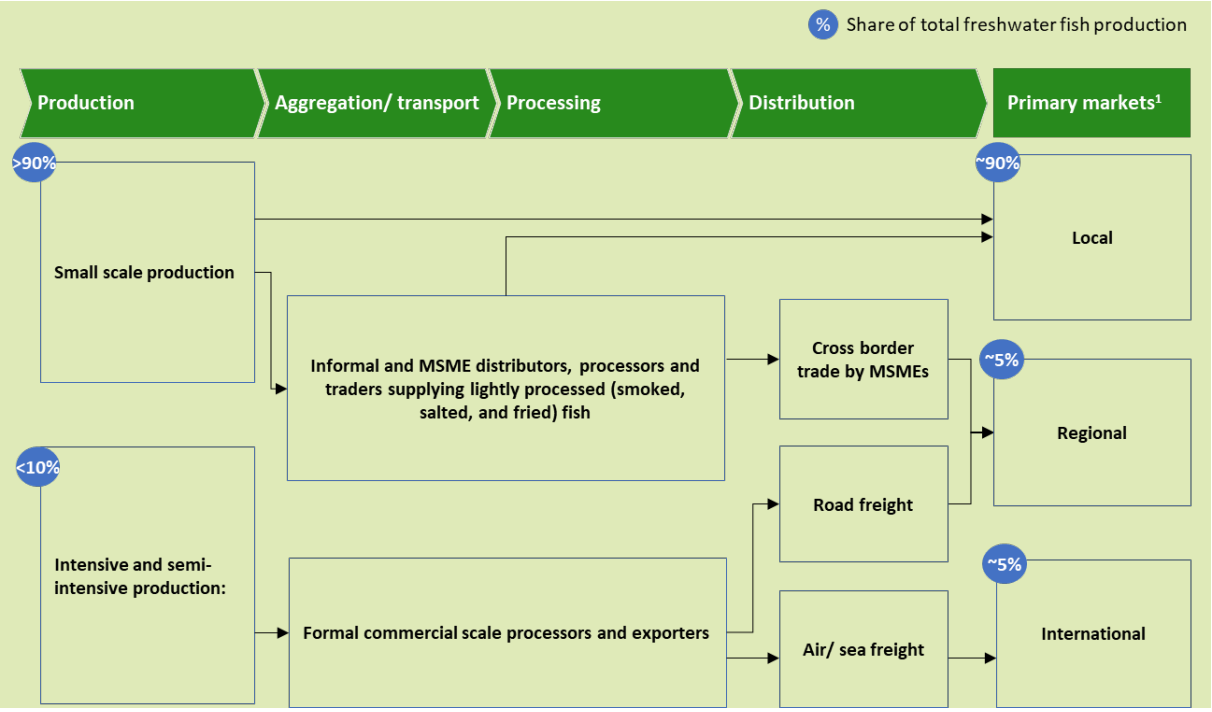



*Figure 90: Access to market route for fisheries sector*

As illustrated by Figure 91, the trade of fish from Tanzania predominantly goes to the DRC, Rwanda and Burundi. The regional trade is dominated by freshwater species including tilapia, Nile perch, sardines (omena/dagaa/mukene), and low volumes of catfish. International markets include among other EU markets, China, and several Asian nations for marine items including tuna, octopus, shrimp, lobsters, prawns, crabs, and seaweed. In addition, fish maws (mabondo) are a lucrative industry, but not always well regulated.

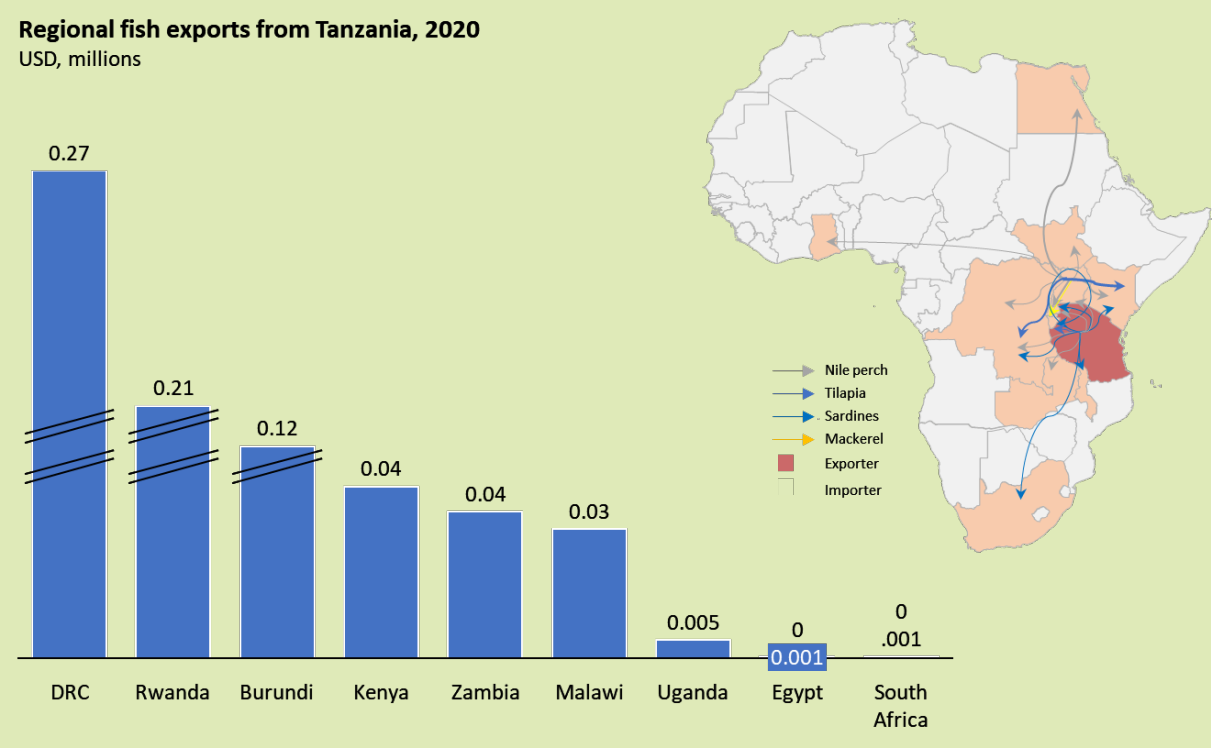



*Figure 91: Main export routes for fish from Tanzania*

**Fisheries opportunity #5: Construct additional fishing harbours**

Complete construction at Kilwa Masoko in Lindi region, with a capacity to handle ~60,000 tonnes of fish a year to increase export capacity. Upon completion, scope new sites for construction of additional harbours, ensuring they are large enough to accommodate larger vessels fishing in Exclusive Economic Zones (EEZ).

**Fisheries opportunity #6: Increase export of key commodities**

Increase exports of commodities with high international market demand, namely: sea cucumber culture, seaweed, post-larvae for prawn farming, and tilapia fillets for regional markets.

## II. Opportunities

Based on the situation, six opportunities were identified across the value chain of fisheries, as seen below:

**Summary of fisheries opportunities:**

1. **Ensure effective management of fisheries stocks by reinforcing monitoring, control and surveillance**
2. **Enhance access to inputs for capture fisheries and aquaculture to allow sustainable intensification and expansion**

3. **Reduce post-harvest losses to increase fish quantities available for processing**
4. **Improve overall processing levels (both for domestic consumption and export) with an added focus on seaweed**
5. **Construct additional fishing harbours**
6. **Increase exports of commodities in high-potential value chains**

**Commodity-specific opportunities**

- Based on the same criteria as livestock, aquaculture/mariculture emerges as the prioritised commodity - as Tanzania has the potential to boost its production by approximately 130,000 tonnes by 2030 by taking advantage of available fresh and marine areas. There are currently only **~30,000 earthen ponds and ~993 cages** compared to **land suitable for aquaculture** (i.e., ~58km² for fresh and ~64,000km² for marine). Moreover, given Tanzania's need to find other sources of animal protein to cater to the demand of a growing middle class, and increasing overall levels of population, aquaculture is one of the most **environmentally and financially efficient protein solutions** (tilapia's feed conversion ratio (FCR) is **five times lower than that of beef**)**.** The key pathways to achieve this include transformation led by commercial farmers, transformation led by smallholder farmers, and an input-led transformation approach.

| | | Criteria | | | | | |
|---|---|---|---|---|---|---|---|
| | Commodities | Share of ag. GDP, % | High growth potential | Small-holders | Resilience & sustai-nability | Better Diet | Region |
| **Animal protein** | Aquaculture | <0.1% | ✓ | ✓ | ✓ | ✓ | Cages: Lake Victoria and Tanganyika mainly; ponds: all |

# 4 Flagships and commodities to drive the transformation

# 4. Flagships and commodities to drive the transformation

## A. Overview flagships and commodities

**The AMP's impact will be achieved through the implementation of 15 flagships which will enable the development of 20 prioritised commodities by 2030.** These flagships are ambitious development projects designed to unlock large opportunities by resolving specific issues across the value chain. The use of specific flagships has been demonstrably pivotal in many agriculture transformations across the world. Flagships bring dedicated focus to resolving the most pressing issues faced by a myriad of stakeholders. By ensuring that these flagships do not try to resolve bottlenecks across all commodities but rather focus on prioritised ones further elevates their impact. They can unlock value from farm to fork and ensure commercial viability across the value chain.

**The 15 flagships have been designed on the basis of findings from the sectoral diagnostic and in line with the guiding principles of the AMP.** The diagnostic identified many challenges which are limiting the growth of the sector, ranging from resource limitations to market access difficulties. From understanding these challenges, key opportunities emerged which can unlock significant value for the sector. Ensuring focus is paramount and hence the flagships were designed to unlock the largest available opportunities. The design of the flagships was informed by stakeholder engagement, experiences in Tanzania and other countries, and by the guiding principles of the AMP. Including these guiding principles in the design of the flagship ensures that themes such as inclusion are fundamental to all activities. Finally, these flagships were further refined to ensure they would collectively lead to the outcomes by 2030 set out by the ambition of this AMP. The flagships were then mapped to the four pillars of the ambition and to the fifth pillar linked to the 'enabling environment' (a mapping of the flagships and the challenges they address as well as the mapping with the guiding principles is provided in section 6B of the Annex).

**As seen in the diagnostic, 20 commodities have been prioritised across crops, livestock, and fisheries to drive the growth of the agricultural sector.** This focused prioritisation is needed, as the country currently grows, raises, and catches more than 200 commodities. Without focus, the flagships interventions would be spread too thin and limited impact would be achieved. The prioritisation has been informed by a robust fact base with specific dimensions and co-constructed with key stakeholders to reflect strategic importance. The dimensions used reflect the key guiding principles and comprise share of agricultural GDP, potential for growth, importance to smallholders (including inclusion), resilience and sustainability, and nutritional importance. Finally, the prioritisation has also ensured that commodities from various categories (e.g., traditional cash crops, horticulture) are included.

**The flagships have been designed specifically to support the development of these commodities and their relationship is structured around a two-tier support system**. Tier 1 relationship between a flagship and a commodity indicates that unlocking the flagship is crucial for the support and development of a commodity. Tier 2 relationships indicate lighter, albeit necessary support from the flagship to the commodity. This structured approach ensures that each commodity receives tailored support, addressing its unique challenges and maximising its development potential. Importantly, while the focus is on the prioritised commodities, the AMP also acknowledges the development of non-prioritised commodities, albeit with a lesser focus and ensures flexibility to accommodate for changes in priorities (see section 6D of the Annex).

An overview of the 15 flagships is shown below, followed by the 20 prioritised commodities. This is followed by a matrix mapping out the Tier 1 and Tier 2 relationships between the flagships and the commodities. Finally, distinct narratives of paddy, dairy, and aquaculture illustrate how each commodity benefits from targeted flagship interventions, encapsulating a focused strategy towards achieving sustainable agricultural advancement.

# Overview flagships of the Agriculture Master Plan

2030 Ambition | X Flagship

## Enhance productivity of key commodities by >50% in a sustainable and resilient way

1. **Expand area under irrigation to 1.2Mha** and build irrigators organizations capacity with a focus on seed production and priority commodities
2. **Quintuple seed** production by boosting private production and improving efficiency of government organizations
3. **Improve soil health by developing agriculture management plans across 3Mha and by transitioning 3Mha to climate smart agriculture** though on-farm soil mapping to develop action plans and national soil degradation assessments to develop climate smart practices

## Increase smallholder income by >20%

4. **Scale upstream and downstream market linkages for 2M+ smallholders to access quality inputs, markets, and other services,** by formalizing and scaling smallholder groups across 1.7M agriculture entities (e.g., farms/ponds), and incubating farmer-facing SMEs through BBT and third-party accelerators
5. **Improve red meat & dairy farmers' access to market by promoting viable offtake volumes and high product quality,** through improved breeding programs, scaled pasture production, mass vaccination campaigns, expanded livestock traceability, and establishment of new MCCs and small ranches
6. **Develop traditional cash crops and major food crops through board-led excellence** in orchestrating various actors and resources across priority value chains to create a conducive environment for smallholders to access better markets and thrive

## Promote the development of >1000 medium and large-scale commercial entities across the value chain

7. **Improve profitability and operational effectiveness of agriculture businesses in TZ,** via removal of agriculture-specific regulatory barriers (incl. export barriers), and by scaling (S)AGCOT from 1 to 4 corridors as an implementation mechanism for policy changes
8. **Accelerate the development of commercial activities of priority commodities** - wheat, soya beans, poultry, aquaculture and fertilizer - by unlocking prerequisites to increase investment from private sector
9. **Increase specific commodities processing by 10x** by developing warehouses and market linkages, building one agro-industrial processing cluster and building processing infrastructure for sisal, cashew nuts, poultry, fisheries, dairy and packaging

## Facilitate export to reach 6 Bn$ export

10. **Increase regional and international export to $6Bn** by enhancing cold chain, airport and seaport capacity and efficiency, including processes

## Create supportive enabling environment

11. **Digitally register 9.9 Mn farmers & stakeholders** and digitalize agriculture ecosystem to enable targeted farmer support, informed decision making, etc.
12. **Boost coverage of extension services by ~2X, and improve quality of services** through the establishment of an operational supports fund, hiring of new extension agents, scaling of digital extension services, and establishment of required refresher programs
13. **Provide access to financing to 1.7 Mn beneficiaries in groups and 30k SMEs** through adapted products, increased distribution networks and risk-sharing
14. **Sustainably unlock 1.5Mha for commercial agriculture and 1.2Mha land ownership for smallholders** including women and youth through an agricultural land database
15. **Enhance Food Security** through strengthened Early Warning Systems, Strategic Food and Feed Reserves and emergency response, as well as fish Monitoring, Control, and Surveillance

# 20 Prioritized commodities to drive the transformation of the sector

| | Commodities | Criteria: Share of ag. GDP, % | High growth potential | Small-holders | Resilience & sustai-nability | Better Diet | Region |
|---|---|---|---|---|---|---|---|
| **Horti-culture** | Fruits (focus on avocado and banana) | 11.9% | ✓ | ✓ | | ✓ | Iringa, Arusha, Kilimanjaro, Njombe, Tanga, Mbeya, Morogoro, Kigoma, Kagera |
| | Spices (focus on cloves) | 0.2% | ✓ | ✓ | ✓ | ✓ | Tanga, Morogoro |
| | Vegetables (focus on cassava and potatoes) | 6.2% | ✓ | ✓ | | ✓ | Njombe, Arusha, Kilimanjaro, Mbeya, Iringa, Morogoro |
| **Traditional Cash crops** | Cotton | 2.4% | ✓ | ✓ | | | Simiyu, Mwanza, Geita, Shinyanga, Mara |
| | Cashew | 1.3% | ✓ | ✓ | | | Lindi, Mtwara, Pwani, Ruvuma, Tanga and Singida-Manyoni |
| | Sisal | 0.2% | ✓ | ✓ | | | Tanga, Morogoro |
| | Coffee | 1.0% | ✓ | ✓ | | | Kilimanjaro, Kagera, Arusha, Mbeya, Songwe, Ruvuma |
| **Cereals** | Maize | 7.5% | ✓ | ✓ | ✓ | ✓ | All |
| | Paddy | 7.8% | ✓ | ✓ | ✓ | ✓ | Morogoro, Mbeya, Shinyanga, Mwanza, Kilimanjaro |
| | Sorghum | 2.4% | ✓ | | ✓ | ✓ | Dodoma, Singida, Shinyanga, Mwanza, Mara, Lindi, and Mtwara |
| | Wheat | 0.3% | ✓ | | ✓ | ✓ | Manyara, Arusha, Kilimanjaro, Mbeya, Njombe, Rukwa, |
| **Oilseeds** | Sunflower | 1.1% | ✓ | ✓ | ✓ | ✓ | Dodoma, Singida, Manyara |
| | Sesame | 1% | ✓ | ✓ | ✓ | ✓ | Lindi, Dodoma, Ruvuma |
| **Pulses/ beans** | Soyabeans | 0.2% | ✓ | ✓ | ✓ | ✓ | Ruvuma, Mbeya, Njombe, Iringa, Lindi, Mtwara, Songwe, Morogoro, Rukwa |
| | Kidney beans (and other pulses) | 1.0% | ✓ | ✓ | ✓ | ✓ | Ruvuma, Simiyu, Mbeya, Lindi, Mtwara, Shinyanga, Kagera, Kigoma |
| **Animal protein** | Aquaculture | <0.1% | ✓ | ✓ | ✓ | ✓ | Cages: Lake Victoria and Tanganyika mainly; ponds: all |
| | Poultry | 6.1% | ✓ | ✓ | ✓ | ✓ | All |
| | Red meat | 11.1% | | ✓ | | | Tabora, Manyara, Arusha, Simiyu, Kagera, Mara |
| | Dairy | 7.6% | ✓ | ✓ | ✓ | ✓ | Tanga, Arusha, Mwanza, Mbeya, Morogoro, Kilimanjaro |
| | Fodder | <0.1% | ✓ | ✓ | ✓ | | Tabora, Tanga, Manyara, Arusha, Simiyu, Kagera, Mwanza, Mbeya, Morogoro, Kilimanjaro, Mara, Kagera |

**While the focus is on the prioritized commodities, the AMP also acknowledges the development of non-prioritized commodities, albeit with a lesser focus and also ensures flexibility to accommodate for changes in priorities during the implementation of the plan**

# The 15 flagships will address critical bottlenecks to enable the growth of the 20 prioritized commodities

# Example: Impact of the flagships on the journey of Juma, a paddy farmer and Rosa, a trader in Dakawa - Morogoro

## 1. Ahead of the planting season

Juma is delighted; he has a **secure field** due to the Customary Certificate Right of Occupancy (CCRO) he processed for his land and has joined **the paddy farmer organization** in his village to help him access affordable quality inputs and services. As the start of the season nears, he can now **access financing, quality inputs including resilient seeds with lower emissions, fertilizers, tailored agriculture management plans and has market linkage** with Rosa with whom he can agree on terms (e.g., variety, price, quality) and set-up a fair purchase agreement for his paddy

2 3 6 7 8 12 13 14 15

## 2. During the growing season

As the **planting begins,** Juma can confidently **irrigate** and cultivate his paddy field utilizing resilient inputs and improved climate smart practices. As the paddy develops in the field, Juma can receive **early warnings on disease outbreaks, weather patterns and overcome challenges** which occur during crop development with the support of digital and physical **extension support**

1 2 3 4 6 7 8 12 13 14 15

## 3. After the season

As harvesting and sales begin, Juma has **visibility on market trends** and **knowledge on harvesting** and **storage techniques** to maintain quality. Being better organized, Juma can **attract the best prices** for his paddy as he sells to Rosa who is a paddy processor and trader

4 6 7 13 14 15

## 4. Before the offtake

Rosa was able to **improve her paddy milling plant,** employ labor, etc. and was set-up with **financing** to purchase paddy in sufficient volumes from farmers, keeping her mill working day and night

7 9 10 13 14

## 5. Reaching consumers

Tanzania being a food basket and trade hub for rice, Rosa can sell her rice in the **domestic markets and access international markets** with ease. As Rose earns healthy profit, she can then re-invest in the country and prepares for the next season

7 10 11

### Flagships

1. Irrigation
2. Seeds
3. Climate smart
4. Smallholder organization
6. Crop boards
7. Ease of Ag. business
8. Commercial value chains
9. Processing
10. Export
11. Digitalization
12. Extension
13. Financing
14. Land access
15. Early warning

# Example: Impact of the flagships on the journey of Maria, a dairy farmer in Musoma

## 1. Set-up operations

Maria and her local community members **confirm availability of suitable pastures and organize into a new dairy cooperative** to start operations and **access financing** for new animals/ inputs. Upon group formation, Maria **buys 5-10 heifers from a local trader and acquires accompanying inputs** for animal raising, including **vaccines and supplementary fodder.**

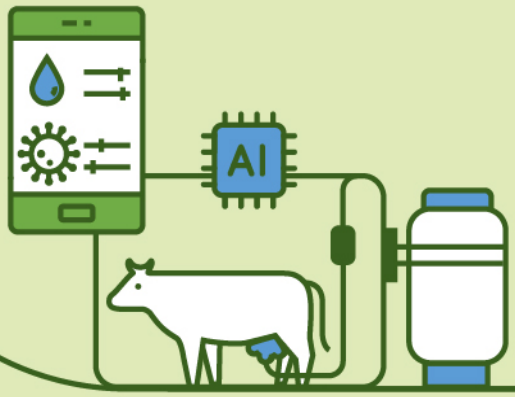
Maria's cooperative also collectively invests in a **bore hole for animal drinking,** esp. during prolonged drought conditions. Each cooperative member **registers their new animals** on the national **traceability platform** to trace their movement and any encounters with diseased animals.

3 4 5 11 13 14

## 2. Raising cattle (milking and collecting)

**Maria requests Artificial Insemination (AI) services to impregnate her heifers for lactation.** Throughout the year as she milks her cows, she **provides them with required inputs,** with **guidance from local extension agents** on improved animal management techniques **and climate smart practices** (e.g., pasture rotation). She also maintains **connectivity to early warning systems for imminent drought/ disease outbreak,** to prepare for changing conditions.

After harvesting the milk each day, **she sends her milk to the cooperative's Milk Collection Center (MCC),** where each member's milk is aggregated for offtake.




3 5 12 15

## 3. Reaching consumers

**A commercial dairy processor collects milk from the MCC each day** using **cold-storage vehicles** and t**akes the milk for processing** into yoghurts and cheeses.

**Some of the processed products are exported** to neighboring companies through nearby seaport gateways.


7 9 10

### Flagships

1. Irrigation
2. Seeds
3. Climate smart
4. Smallholder organization
6. Crop boards
7. Ease of Ag. business
8. Commercial value chains
9. Processing
10. Export
11. Digitalization
12. Extension
13. Financing
14. Land access
15. Early warning

# Example: Impact of the flagships on the journey of John, an aquaculture farmer, and Glory, a processor in Mwanza

## 1. Setting-up sustainable operations

After obtaining a **license** to farm in Lake Victoria, John and his community members organize into a **new cooperative** to secure **funding** through **aquaculture financing initiatives,** invest in sustainable **technologies and equipment** (e.g., cages) and access **affordable quality inputs,** incl. fingerlings and feed. He receives training on w**ater quality management and fish health monitoring** to improve yields.

1 3 4 7 8 11 12 13 14 15

## 2. Enhancing growth practices

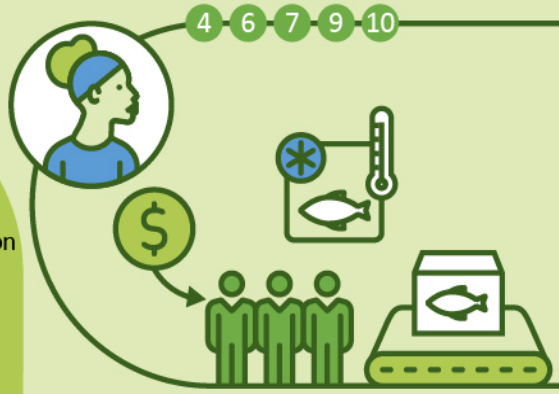
As the fish mature over the months, John provides them with **improved feed** and applies **smart aquaculture practices,** under the **guidance of local extension agents.** He benefits from **early warning systems** to proactively manage aquatic diseases and environmental fluctuations, with the aid of both cutting-edge digital tools and on-the-ground expert support.

2 3 4 8 11 12 15

## 3. Maximizing post-harvest profits

John uses proven **harvesting and cold storage methods** to keep his fish fresh. For sales, he relies on **market information systems** to price them well and sells directly to Glory, a fish processor and trader.

4 6 7 9 10



## 4. Processing the fish

Glory, a commercial processor, got the funding needed to buy large amounts of fish from farmers. She hired workers to efficiently prepare the fish for sales by **fileting and freezing it to high quality standards.**

7 9 13

## 5. Extending market reach

Glory partners with **suppliers and traders** to secure consistent contracts Locally, she ensures prompt delivery using **refrigerated transport services.** Some of the processed products are **exported** to neighboring companies through nearby seaport gateways

7 10

### Flagships

1 Irrigation
3 Climate smart
4 Smallholder organization
7 Ease of Ag. business
8 Commercialization
9 Processing
10 Regional export
11 Digitization
12 Extension
13 Financing
14 Land access
15 Early warning

## B. Impact of flagships and commodities

**The flagships will unlock the growth of the prioritised commodities, which will lead to a 10% annual growth rate of the agricultural sector by 2030.** The growth will translate in an increase of agricultural GDP of US$13 billion (i.e., value generated from crop, livestock and fisheries production), with an additional increase of ~US$0.5 billion when considering the positive feedback loops on the rest of the economy (i.e., increase in demand of agricultural produce when the overall economy grows). This is because the AMP will also lead to an increase of US$7 billion across the rest of the economy, for example in processing, trade, and infrastructure. It should be noted that agricultural produce processing will double to reach US$3 billion and net exports will grow fivefold to reach ~US$5 billion. The growth of the prioritised commodities is detailed in section 4E.

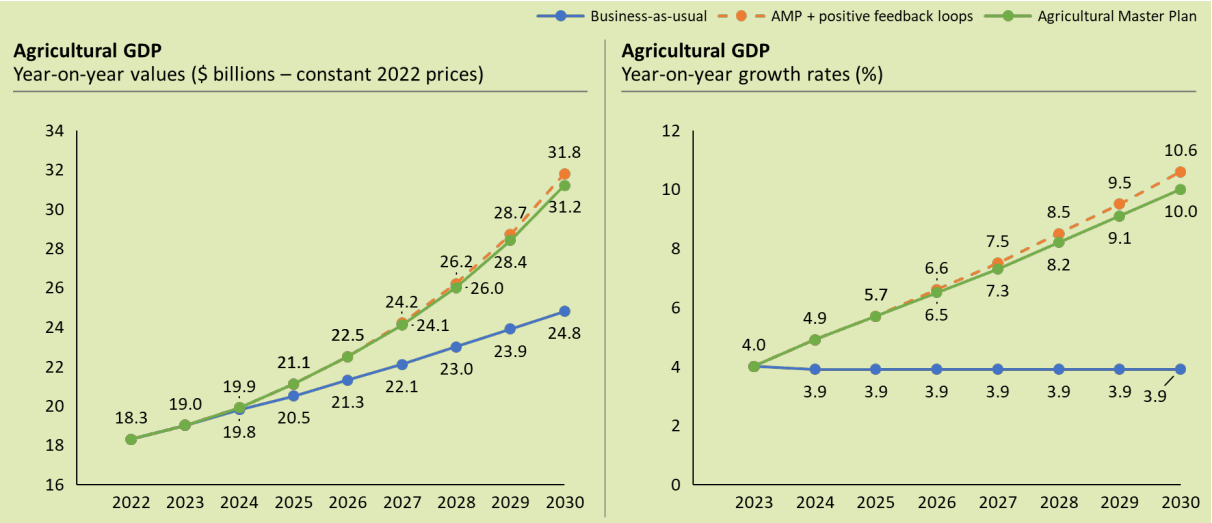



*Figure 92: Total growth of the Agricultural GDP in absolute and relative value as a result of the AMP*

**The AMP's impact goes beyond the growth of agricultural GDP as it will lead to an increase of smallholder income of ~25%.** It is critical to support rural development through the AMP as an increase in smallholder income will directly translate in a reduction of people living in poverty of 7 million (using the World Bank's international poverty line). This increase in income, accompanied by higher production of food, will also reduce the share of undernourished people from 25% of the population to 15%. Finally, a shift will start to appear in labour composition as the share of people working in the agriculture sector will drop from 65% to 60%. This is, however ,a lagging indicator. Further decreases will take place beyond 2030.

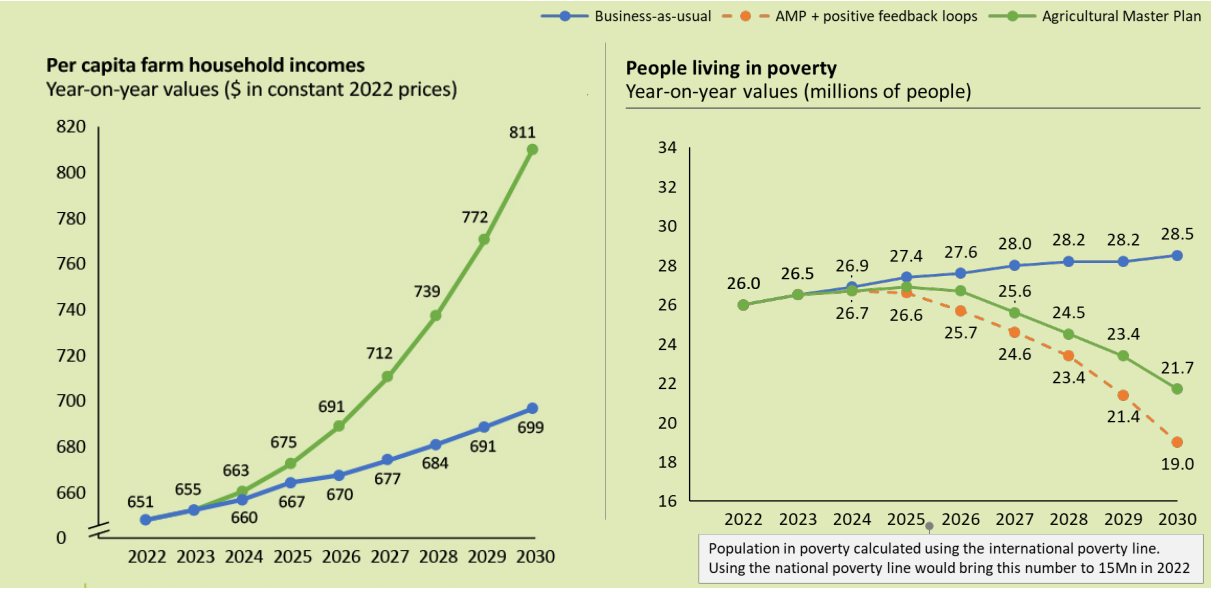



*Figure 93: Increase in smallholder income and decrease in people living in poverty as a result of the AMP*

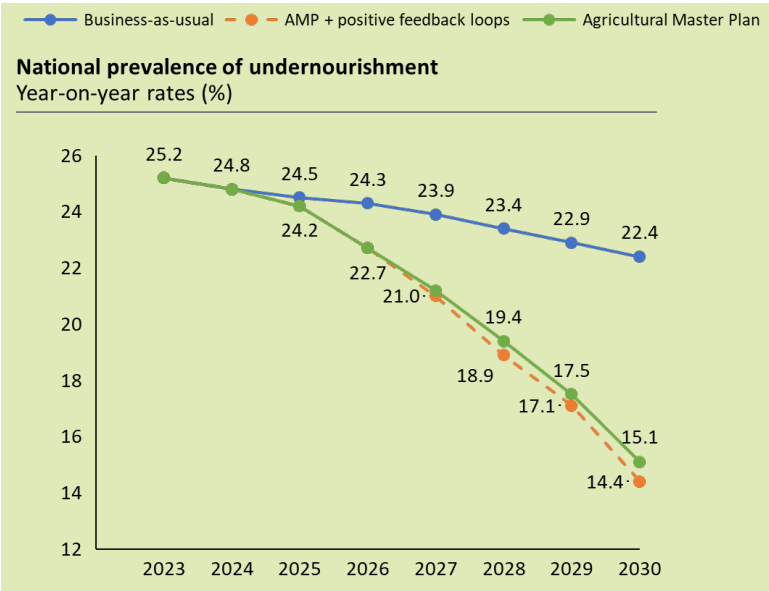



*Figure 94: Decrease in prevalence of undernourishment as a result of the AMP*

**Achieving this growth of the sector will require focus from the Government to implement the flagships and a public investment of US$5.5 billion.** This cost needs to be translated into a government budget and will predominantly come from the MoA and the MoLF, but also partially from the Ministry of Trade and Industry and other sectoral lead Ministries. This budget could be supported by development partners through various financing mechanism (e.g., P4R, project financing, and direct budget support). The total cost of the AMP has been designed to be in line with budgetary constraints to ensure the government has the adequate resources to implement it. On top of the investments from the government, the plan identified the need for at least US$3.5 billion of investment from the private sector. This has been derived from discussions with existing and potential private sector players assessing

what would be needed to unlock certain investments. Given the disperse nature of the private sector, it is critical to consider this number as an aspiration, but not as a precise target.

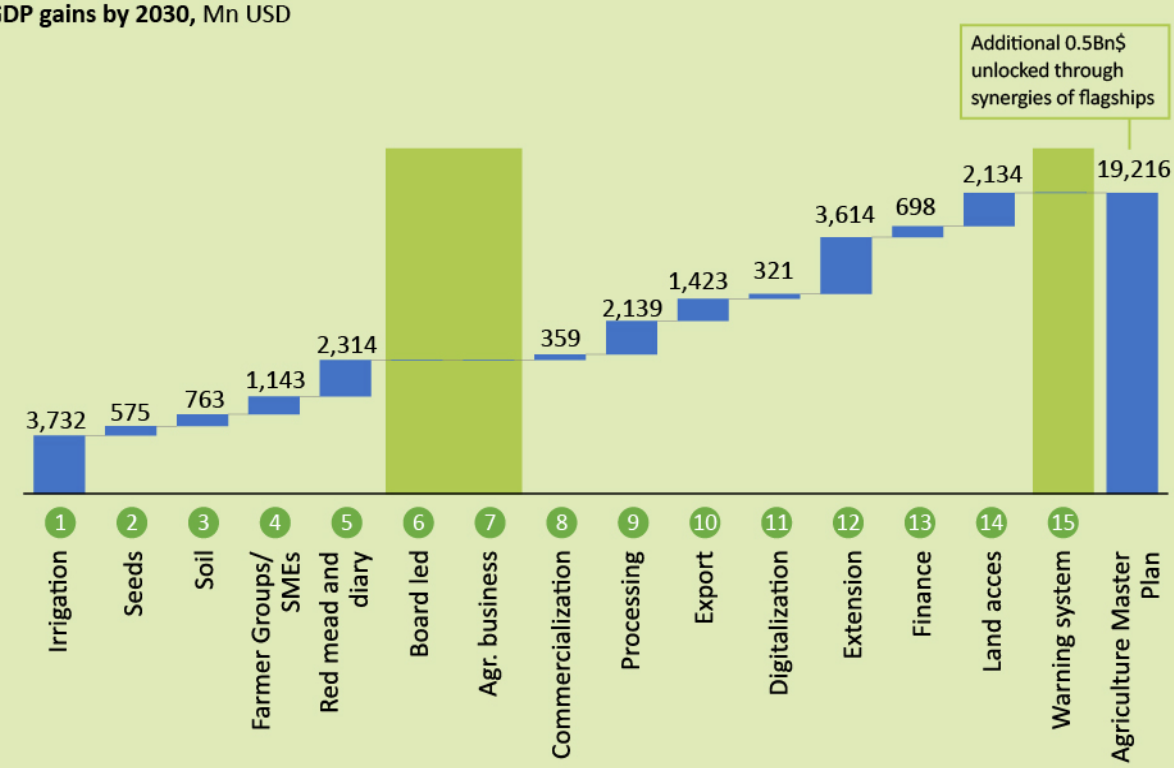
**Comparing the AMP's benefits and costs allows to derive the GDP benefit-cost ratio of the plan which is 3.5**. This means that for every dollar the government invests, it will lead to an increase of GDP of US$3.50 by 2030. This analysis has been made for each flagship to assess their effectiveness to generate GDP growth. This has been complemented by a similar analysis to assess the impact of the individual flagships on increasing smallholder income, reducing poverty and decreasing undernourishment. This breakdown is key to understanding the impact of the flagships at a granular level. Benefit-cost ratios can be helpful to prioritise and monitor flagships but should not be interpreted without taking context into account. Interdependencies between flagships are not captured in such ratios. For example, a flagship on seeds might have a lower direct impact on GDP improvement but will be critical in ensuring sufficient productivity for processing. Similarly, the benefit-cost ratio has been calculated up to 2030. Hence certain flagships like irrigation, which tend to be large-scale infrastructure projects with longer-term returns, would result in a relatively understated benefit-cost ratio. The GDP benefit-cost ratio of irrigation is only 1.6 by 2030 but rises to 4.4 when this view is extended to 2040. It is essential to use these benefit-cost ratios in context to capture the nuance of the impact of the flagships.

**Implementing the flagships will result in achieving the ambitions of the AMP by 2030 and setting it up for success towards Vision 2050**. If the government were to be able to raise additional funds, or increase the investment from the private sector, it could further increase on these targets.

# Impact of the flagships on 2030 ambitions of the AMP

Benefit flagship captured in other flagships

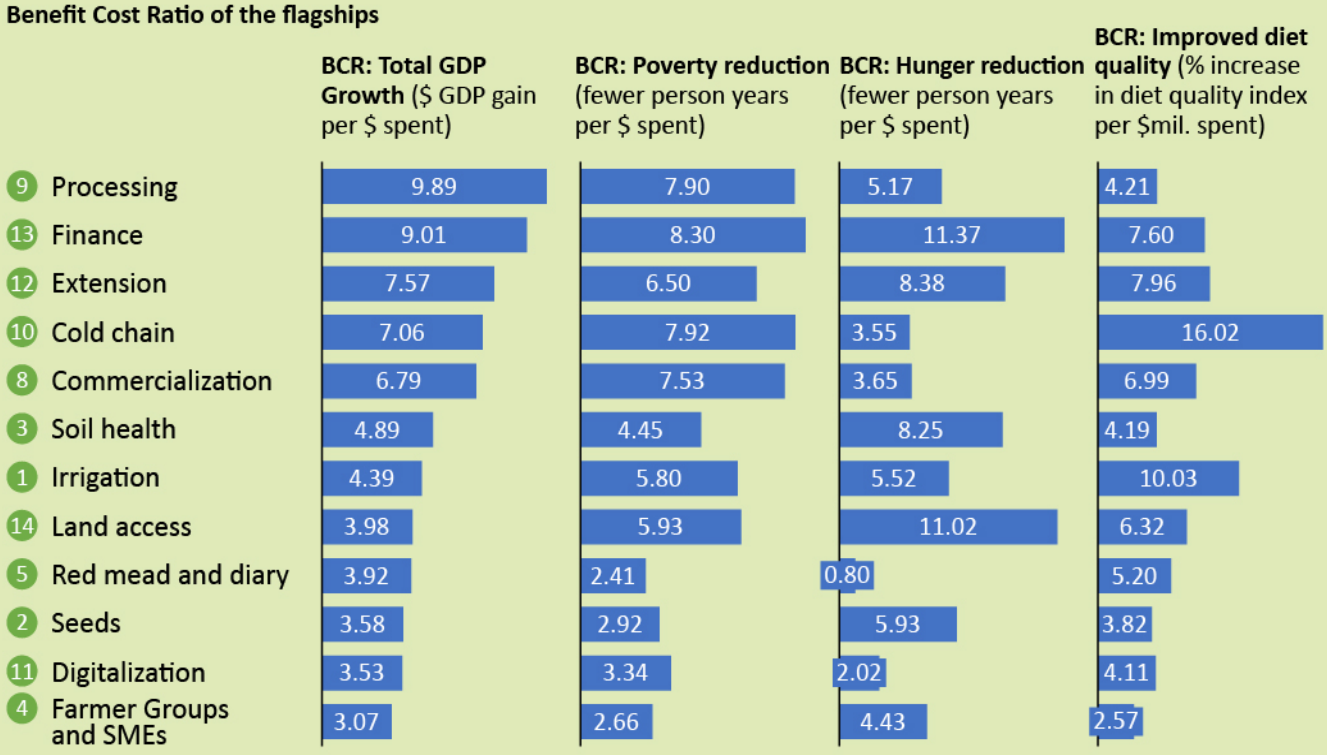
**Cumulative GDP gains by 2030,** Mn USD




| | Irrigation | Seeds | Soil | Farmer Groups/ SMEs | Red mead and diary | Board led | Agr. business | Commercialization | Processing | Export | Digitalization | Extension | Finance | Land acces | Warning system | Agriculture Master Plan |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total costs** | 2267 | 160 | 165 | 373 | 591 | 273 | 26 | 53 | 216 | 201 | 91 | 477 | 77 | 536 | 151 | 5650 |
| **Share costs** | 40% | 3% | 3% | 7% | 10% | 5% | 0% | 1% | 4% | 4% | 2% | 8% | 1% | 9% | 3% | 100% |
| **Benefit cost ratio** | 1.6 | 3.6 | 4.9 | 3.1 | 3.9 | | | 6.8 | 9.9 | 7.1 | 3.5 | 7.6 | 9.0 | 4.0 | | 3.5 |

Irrigation is a longer-term investment, and its return is 4.4 by 2040

**Benefit Cost Ratio of the flagships**



## C. Deep dive into the 15 flagships of the AMP

This section provides an overview of each flagship, setting out context, key stakeholders, initiatives and costing, commodities in scope, priority regions, risks and their mitigations, and evolution beyond 2030. A more detailed perspective of each flagship is included in the Annex, including annual targets and cost. For each initiative of the flagship, the cost has been estimated. These have been categorized in 3 categories: Government spent, Tax breaks and tax incentives, private investment.

# Flagship 1: Expand area under irrigation to 1.2Mha and build irrigators organizations capacity with a focus on seed production and priority commodities

## 1. Context

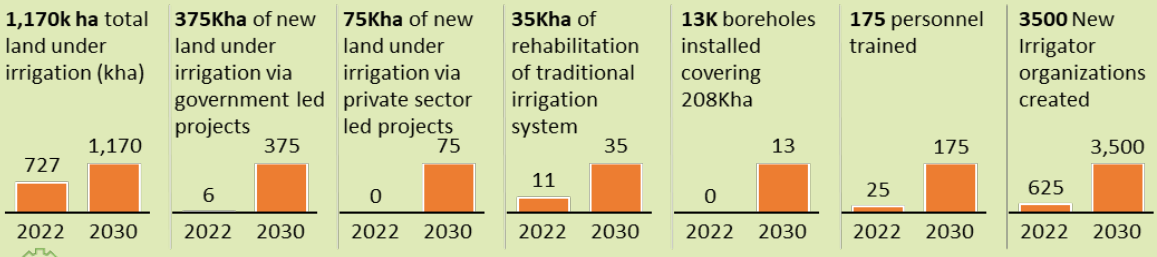
**Currently, only about 0.7 million hectares (out of the potential 29.4 mHa)**, in Tanzania, is irrigated, with the majority (60%) relying on traditional methods. Even the improved systems with higher water efficiency and durability are currently only functional during rainy seasons. Irrigation is critical in increasing agricultural productivity and resilience as it enables multi-cycle cultivation, yield improvement and enhances food security by reducing dependence on rain fed irrigation. There is a need to rehabilitate and improve existing traditional systems, and expand existing or build new irrigation through the government and the private sector

## 2. Key stakeholders

- **Primary implementer:** National Irrigation Commission (NIRC)
- **Ministries**: MoA, MLF, MoF, MICICT to implement policies and sectoral coordination
- **LGAs:** to facilitate local-level program execution
- **Gov't agencies:** TARI, ASA
- **Boards:** COPRA, TCB, TSB, etc.

## 3. Objectives and KPIs

*Increasing agricultural productivity and climate resilience by increasing area under irrigation to enable multi-cycle cultivation, yield improvement and enhance food security by reducing dependance on rain fed irrigation*




## 4. Initiatives and costing

| Components | Initiatives | Timeline | Costing (M $USD) |
|---|---|---|---|
| **A. Government-led increase in area under irrigation by 375kHa** | **A.1 - Conduct a baseline study** to determine current irrigation situation in the country to prioritize implementation of new and rehabilitation projects | 24 25 26 27 28 29 30 | 3 |
| | **A.2 - Conduct feasibility studies to create a pipeline of projects** that are ready for implementation by government and private sector | | 136 |
| | **A.3 - Implement new government led large, medium and small irrigation schemes** to add 110kHa of new irrigated area | | 1,100 |
| | **A.4 - Expand area under irrigation of existing systems** by scaling up water distribution to cover additional 35kHa of new irrigated area | | 140 |
| | **A.5 - Rehabilitate existing traditional irrigation systems** to ensure their proper functioning with a target of 35kHa currently under irrigation | | 140 |
| | **A.6 - Roll out 13,000 bores across the country** to add 208kHa of new irrigated area with targeted focus on specific regions and value chains | | 587 |
| | **A.7 - Develop and implement the lake zone irrigation program** with the aim of irrigating up to 22kHa of land around Lake Victoria | | 154 |
| **B. Unlock private sector investment via PPPs and private commercial/equity financing** | **B.1 - Inter-ministry review of current water use policies** to clarify water rights, simplify process to obtain water permits and communicate this progress with pubic | | 1 |
| | **B.2 - Increase investment in irrigation via PPP framework** by prioritization of projects, customization of PPP agreements and tendering, and reaching out to private sector for investment | | 1 750 |
| **C. Enhance institutional capacity to support growth, maintenance of irrigation systems** | **C.1 - Train commission staffs, regional and district irrigation offices** with implementation tools to support operation and maintenance of systems | | 1 |
| | **C.2 - Further develop national irrigation fund** needed for maintenance of existing systems and **support creation of irrigators organizations (IOs)** for the operation and proper use of new systems | | 6 |
| | **Total funds required** | | 750 2,267 3,017 |

Gov PI

## 5. Key commodities and regions

**Commodities**: Seeds (critical priority), paddy, maize, wheat, soya, fruits, vegetables

**Regions**: All

## 6. Risks and mitigations

- **Inadequate government budget** > prioritize boreholes and lake zone projects
- **Insufficiently skilled` human resources** > ensure proper resource planning to build necessary capacity
- **Operation and maintenance of irrigation infrastructure** > use national irrigation fund and irrigators organizations to support

## 7. Evolution beyond 2030

- Shift towards more borehole and lake zone-based irrigation in a manner that is sustainable
- Drive private sector investment in irrigation through direct investment or via PPPs on government led projects

# Flagship 2: Quintuple seed production by boosting private production and improving efficiency of government organizations

## 1. Context

**Overall seed production in the country is low**, currently meeting ~25% of its effective demand and ~13% of its potential demand. Availability and use of certified seeds is critical to increasing productivity and resilience against disease, pests and climate. Some of the key challenges to seed production include the lack of coordinated approach among stakeholders in the seed sector, low participation of private sector in seed production and productivity challenges in government led seed breeding and multiplication due to organizational inefficiencies and lack of adequate institutional capacity

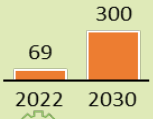
## 2. Key stakeholders

- **Gov't agencies:** TARI, ASA, TOSCI, etc.
- **Private sector:** seed producers and distributors such as TASTA, World Vegetable Center, SeedCo, etc
- **Ministries:** MoA, MLF, MoF to implement policies and sectoral coordination
- **LGAs:** to facilitate local-level program execution

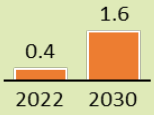
## 3. Objectives and KPIs

*Significantly increase utilization and adoption of certified of seeds by smallholders to increase productivity and resiliency to disease, pests and climate change by boosting private sector seed production*

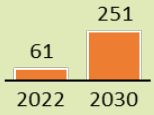
**300kMT** certified seeds available in the country



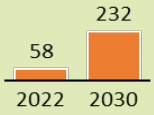

**1.6kMT** of early generation seeds produced by TARI



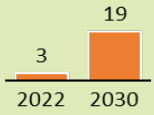

**251kMT** domestic prod'n of certified seeds



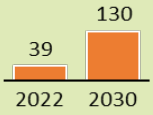

**232kMT** certified seeds produced by private sector




**19kMT** of certified seeds produced by ASA




**130kHa** land available for seed production




## 4. Initiatives and costing

Cost covered in other flagships | Gov | PI

| Components | Initiatives | Timeline | Costing (M $USD) |
|---|---|---|---|
| A. Boost TARI's capacity to breed new crop varieties and produce high-quality early generation seeds | **A.1 - Increase land available and utilized for breeding and production of early generation seeds** by preparing current unused land, and adding new | 24252627282930 | 2 |
| | **A.2 - Fully Irrigate all land dedicated to breeding** and production of early generation seeds to enable multi-seasonal production | | 60 |
| | **A.3 - Market led development of 5 new high-potential crop varieties per year** via improved R&D funding and enhanced research partnerships | | 5 |
| | **A.4 - Boost organizational efficiency of TARI** to increase its productivity, speed of research, and quality of breeder & early generation seeds by investing in human capacity, and modern tools and infrastructure | | 13 |
| B. Increase capacity and capability of ASA | **B.1 - Increase land available and utilized for seed multiplication** via ASA for private sector use and investing in its preparation for ease of cultivation | | 16 |
| | **B.2 - Increase area under irrigation for seed multiplication** to double production by enabling multi-seasonal production of certified seeds | | 218 |
| | **B3. Increasing ASA land leased to private seed producers** by improving leasing terms and negotiating other necessary requirements | | 11 10 21 |
| | **B.4 - Develop ASA's institutional capacity and its organizational** efficiency to produce, promote and distribute certified seeds to drive adoption and uptake via partnerships and improvement of infrastructure and equipment | | 95 |
| C. Capacitate TOSCI | **C.1 - Scale up TOSCI's ability** to efficiently inspect and certify seed and seed production across all players | | 14 |
| D. Unlocking private sector investment in seed production | **D.1 - Increase land available by government for private seed production** that can either be bought directly or leased for seed production | | 15 |
| | **D.2 - Stakeholder engagement** to increase private sector involvement in seed production | | 1 |
| E. Coordination across seed sector players | **E.1 - Co-ordinate to prioritize specific crops** and their respective improved seed varieties | | 3 |
| | **E.2 – Clarify role** of private sector and gov't in seed production | | 1 |
| | **Total funds required** | | 160 11 293 465 |

## 5. Key commodities and regions

**Commodities**: Priority commodities selected as part of the master plan, and all other commodities to support overall production

**Regions**: All regions that are under cultivation

## 6. Risks and mitigations

- **Political interruptions in seed production** > set up proper governance for coordination and long-term demand/production planning
- **Low uptake of improved seeds** > government investment in promotion

## 7. Evolution beyond 2030

- Private sector led seed production boosted to meet the potential demand of the entire country
- Tanzania to become a seed exporter in the region
- Seed R&D driven by market led investments from private sector

# Flagship 3: Improve soil health through climate smart agriculture

## 1. Context

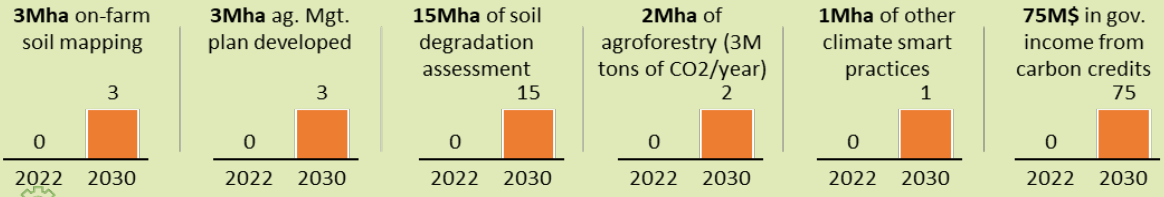
**Land degradation** including loss of biodiversity, vegetation cover, soil pollution, soil erosion, etc. **is on the rise in Tanzania and 61% of soils in semi-arid areas are likely to be degraded**. This is **impacting negatively on productivity** as soils are not able to support the ecosystem as they should. This leads to instances where farmers apply inputs such as fertilizers and crops are unable to access the nutrients. **Unsustainable farming practices and overgrazing** are some of the key factors contributing to increasing land degradation which could be made **worse by climate change**. Farmers and livestock keepers do not have **visibility on their soil health or on how their practices affect the soil**.

## 2. Key stakeholders

- **Ministries:** MoA, MoLF to implement and lead coordination efforts
- **Private sector :** (e.g.) Acorn, Maua Mazuri to provide funds, expertise, tree seedlings
- **Donors:** (e.g.) USAID to complement efforts
- **Research institutes:** TARI, ICRAF, IITA, etc. for technical support

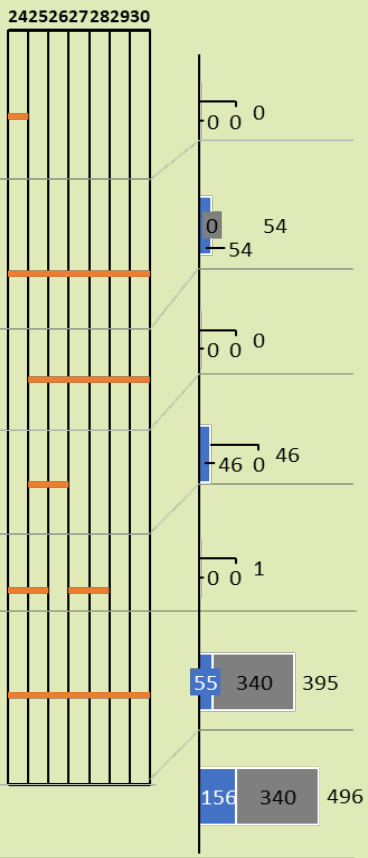
## 3. Objectives and KPIs

*Millions of smallholders have tailored plans for input use and have been supported to transition to climate smart practices increasing their yield, resilience and the sustainability of the sector*




## 4. Initiatives and costing

| Components | Initiatives | Timeline | Costing (M $USD) |
|---|---|---|---|
| **A. Collect soil data to enable the use of tailored inputs to optimize crop yields** | **A.1 - Identify the data gaps** in existing and viable datasets on soil health status This is achieved through the collation and harmonization of various datasets across stakeholder efforts in the country. Analyze the data, develop a national soil management platform through which the data and visualizations can be visible to stakeholders. This would also inform locations to prioritize in A.2 | | 0 0 0 |
| | **A.2 - Pilot on-farm soil testing,** and **scale on-farm soil sampling led by farmers and extension officers using soil test kits and supported by incentives to reach 3Mha by 2030.** The results are uploaded on the national soil management platform with the farmers identifier. Farmers' soils would be tested over time over time to track progress. 10% of samples would be sent to labs for validation/calibration | | 0 54 54 |
| | **A.3 - Pilot and scale the R&D for the development of tailored agriculture management plans**. These plans would be co-developed with farmers using guidelines which pre-recommend inputs/practices based on farmer land soil test outcomes. | | 0 0 0 |
| **B. Support the transition of farmers to climate smart agricultural practices to improve productivity and build resilience** | **B.1 - Implement national soil and vegetation assessment,** utilizing the land degradation surveillance framework (LDSF) to understand **extent of degradation, its drivers across crop and pastureland.** This would involve sensitization and setting up data/sample collection and analytical tools | | 46 0 46 |
| | **B.2 - Collaboratively design climate smart interventions** prioritizing key, degradation hotspots and areas with healthy soil systems so they can be protected | | 0 0 1 |
| | **B.3 - Pilot and scale appropriate climate smart agricultural practices** (e.g., silvopasture, agroforestry, zero tillage, cover cropping, sewing legumes on pastureland, etc.). Creating access to carbon markets through aggregators which would unlock carbon credits revenues for farmers and the gov't. This would require the identification of implantation partners, **capacity dev't** of farmers, extension officers, implementers, and unlocking of existing unused govt. facilities to private investors for e.g., seed nurseries | | 55 340 395 |
| | **Total funds required** | | 156 340 496 |




## 5. Key commodities and regions

**Commodities**: All commodities prioritized in the masterplan would be considered in the development of tailored guidelines and in the deployment of tailored regenerative agricultural practices

**Regions**: All regions but the degradation hotspots would be given priority, these include Dodoma, Shinyanga, Manyara, Singida, Simiyi, Geita and Kilimanjaro

## 6. Risks and mitigations

- Harmonization issues of land and vegetation data > Working group with clear governance structure to enable collaboration
- Capacity development gap and insufficient incentives to transition farmers to climate smart practices > Incentivize change agents

## 7. Evolution beyond 2030

- Expansion of climate smart agricultural practices nation-wide
- Seamless integration of farmer data with soil health and land use which can be tracked and improved over time

# Flagship 4: Scale upstream and downstream market linkages for smallholders, by mobilizing them across 1.7M agriculture entities* into groups, and strengthening the farmer-facing SME ecosystem

**Includes farms, areas for livestock keeping, ponds, etc.*

## 1. Context

**Organized groups of smallholders[1] enhance access to more affordable inputs** (including mechanization),and greater access to markets/ critical services, **since organization strengthens their bargaining power and access to offtake/downstream services.** However, **only ~15% of smallholders are organized, primarily through cooperatives,** which are sometimes burdened by heavy gov't regulation and local gov't interference within cooperative leadership. Smallholder groups typically access inputs and services through **farmer-facing SMEs, which link the groups to upstream/ downstream markets.** However, **agri-SMEs face challenges hindering their scalability,** such as limited training, financing, and networks. **Aspiring youth entrepreneurs have high potential** to graduate into commercial agri-SMEs.

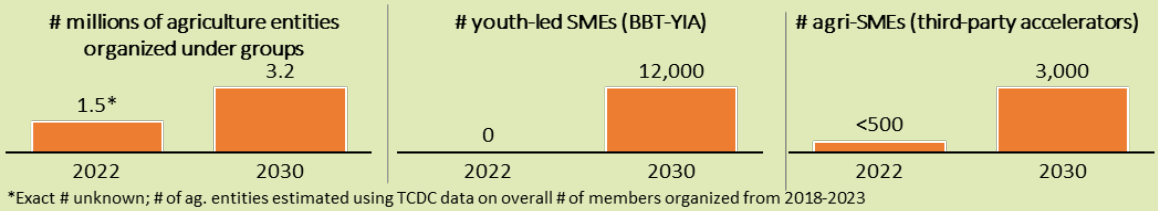
*1. Including farmers, pastoralists, and fisherfolk*

## 2. Key stakeholders

- TCDC, TAHA, LGAs (to create and strengthen farmer groups)
- MoA (to manage BBT-YIA, input subsidies, and ag. mechanization hubs)
- Accelerator programs, such as CEED, SUGECO, Helvetas, TechnoServe (to incubate agri-SMEs)

## 3. Objectives and KPIs

*Smallholder farmers are well-organized into groups that are supported by a flourishing agri-SME ecosystem, which supply farmer groups with high-quality, affordable inputs, access to markets, and other services*




**Exact # unknown; # of ag. entities estimated using TCDC data on overall # of members organized from 2018-2023*

## 4. Initiatives and costing

| Components | Initiatives | Timeline (2024 25 26 27 28 29) | Costing* (M $USD) | Gov | PI |
|---|---|---|---|---|---|
| **A. Create and support new smallholder groups (incl. crop farmers, livestock keepers, and fisher folk)** | **A.1 - Conduct independent review of different smallholder aggregation models,** to understand which models are most effective by region/ commodity (incl. ongoing review of TCDC policies) | | 3 | | |
| | **A.2 - Mobilize farmers across 1.7M agriculture entities** (e.g., through community engagement, membership drives) **into new groups** (based on results from Activity A.1) | | 10 | | |
| | **A.3 - Provide ongoing capacity building and inspection for existing and new smallholder groups,** to ensure sustainable operations and compliance | | 31 | | |
| **B. Establish and equip youth-led agri-SMEs through BBT program** | **B.1 - Create 12K farmer-led and farmer-facing SMEs** across priority commodities (provision of initial inputs incl. land, training & incubation, and access to finance) | | 134 | 34 | 101 |
| | **B.2 - Recruit and train 4000+ youth to become private SME support agents,** that will support youth-led SMEs in B.1 | | 11 | 3 | 8 |
| **C. Incubate farmer-facing SMEs** | **C.1 - Create 3000+ new farmer-led and farmer-facing SMEs** via third-party incubators/accelerators (e.g., SUGECO, Helvetas) | | 31 | 31 | |
| **D. Continue and optimize provision of inputs, subsidies, and access to mechanization** | **D.1 - Review best practices around inputs/ mechanization subsidies** and other financial supports | | 0.3 | 0 | |
| | **D.2 - Subsidize critical inputs to SHF via agro-dealers** (e.g., seeds, fertilizers, pesticides) | | 245 | 245 | |
| | **D.3- Continue Board-led provision of inputs for traditional cash crops** (cashew, coffee, cotton, sisal) | | *Covered by other activities in Flagship 6* | | |
| | **D.4 - Establish mechanization hubs** for SHF to purchase and lease farming equipment | | 47 | | |
| | Total Funds required | | 511 | 373 | 139 |

**Exact split for costing of activities B.1. and B.2. between gov't, dev. partners, and private sector is unknown*

## 5. Key commodities and regions

Commodities: Horticulture, cotton, cashew, sisal, coffee, paddy, sunflower, sesame, dairy, aquaculture, poultry

Regions: Nationwide (initial focus on Arusha, Kilimanjaro, Morogoro, Dodoma, Iringa, Njombe, Tanga, Mbeya, Kigoma, Mwanza, Kagera, Simiyu, Mtwara, Tabora)

## 6. Risks and mitigations

**Early dissolution of farmer groups** that lack adequate supports/training > ensure ongoing capacity building for 3-5 years post group-formation

**Regulatory hurdles to scale agri-SMEs** > ongoing efforts to remove outdated barriers (e.g., for fertilizer innovations)

## 7. Evolution beyond 2030

**Further scale mobilization efforts of smallholders into groups,** so that all smallholders are organized into relevant groups nationwide

**Scale network of agri-SMEs** to ensure every farmer group has formal access to upstream/downstream markets

# Flagship 5: Improve red meat & dairy farmers' access to market by promoting viable offtake volumes and high product quality

## 1. Context

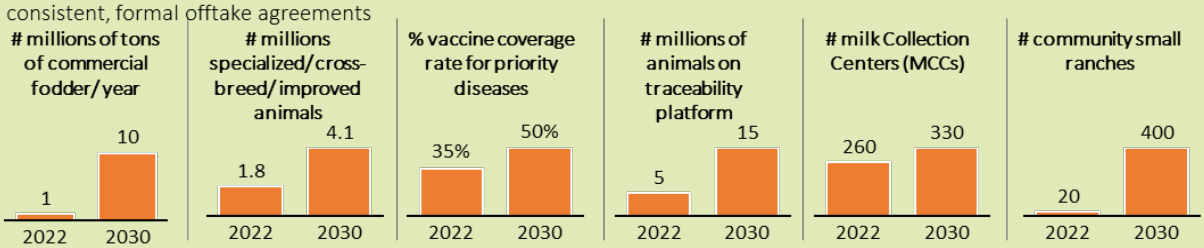
Although TZ has the second largest cattle population in Africa, livestock keepers' **offtake rates of milk and animals are low** (<3% of milk is formally collected), **as production volumes are too low to access formal markets, animal quality is sometimes too low** for niche/ export markets, and there is **limited offtake infrastructure** with consistent market linkages. Many livestock keepers have limited access to quality inputs and services, including fodder, vaccines, and breeding practices, resulting in **lower productivity, relative to the East African average** (TZ vs. East Africa: 396 vs. 519 liters of milk per yr., and 140 vs. 152 kg of beef/carcass weight). Supporting higher productivity is critical, as increasing **dairy consumption** could have significant **nutritional benefits** (per capita consumption currently ~50% of Kenya's.). As production is scaled, it is critical to consider **climate-smart agriculture practices** (e.g., rotational grazing).

## 2. Key stakeholders

- MLF and TAMISEMI (to coordinate and monitor all efforts incl. BBT-LIFE/ community small ranches, pasture seed production in gov't farms, and SHF pasture production training)
- TALIRI, NAIC, LMUs, ILRI (for breeding programs)
- TVI (for vaccine production)
- TDB (to oversee all MCC efforts)
- TMB (to ensure quality practices in community small ranches)

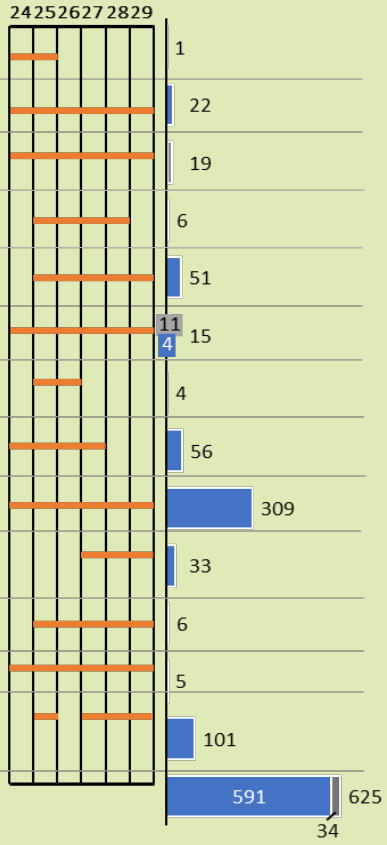
## 3. Objectives and KPIs

Pastoralists/ agro-pastoralists produce year-around, high volumes of quality milk and meat for market and benefit from consistent, formal offtake agreements




## 4. Initiatives and costing

| Components | Initiatives | Timeline | Costing (M $USD) |
|---|---|---|---|
| A. Increase fodder production via SHF and comm. players | **A.1 – Support pasture seed breeding, productivity & certification** through continued laboratory refinement and field testing (TALIRI/ TOSCI) | | 1 |
| | **A.2 - Train and provide support to SHF for increased fodder production** (e.g., through Farmer Field Schools and BBT-LIFE) | | 22 |
| | **A.3 - Provide incentives to commercial fodder producers** (e.g., support with identification of suitable land, pasture seeds) | | 19 |
| B. Increase production of specialized and improved breeds | **B.1 - Enhance foundational breeding research at TALIRI** (incl. creation of 2K improved indigenous breeding stock) | | 6 |
| | **B.2 - Increase production of ~950K specialized and cross-bred, animals at Livestock Multiplication Units,** through mating and bull centers | | 51 |
| | **B.3 - Increase production and distribution of semens from the National Artificial Insemination Center** (NAIC) for ~**1.3 M cattle** | | 11 4 15 |
| | **B.4 - Establish new community breeding programs** to multiply and improve genetics of ~30K improved indigenous breeds | | 4 |
| C. Improve animal health quality and coverage | **C.1 – Construct 3000 dip tanks in villages** with highest rates of tick-borne diseases | | 56 |
| | **C.2 – Produce, procure, and distribute ~70M vaccines/ year for mass vaccination campaign** (ECF, FMD, CBPP, CCPP, PPR) | | 309 |
| | **C.3 – Expand infrastructure/ personnel capacity at gov't vaccine institute to produce and distribute ECF and FMD vaccines** | | 33 |
| D. Expand traceability | **D.1 – Scale digital livestock traceability system,** to register 10M new animals beginning with large-scale ranches | | 6 |
| E. Improve offtake rates through MCCs & small ranches | **E.1 - Construct 70 new MCCs, and increase capacity of ~80 existing MCCs** | | 5 |
| | **E.2 - Pilot and scale communal small ranches for increased productivity (incl. fattening, bore holes, farmer graduation programs) and improved offtake** (incl. youth from BBT-LIFE) | | 101 |
| | Total Funds required | | 591 625 34 |




## 5. Key commodities and regions

Commodities: Dairy, red meat, fodder

Regions: Tanga, Arusha, Mwanza, Mbeya, Morogoro Kilimanjaro, Tabora, Manyara, Simiyu, Kagera, Mara, Manyara

## 6. Risks and mitigations

**Increasingly hot/ dry climate for fodder production and fattening services** > innovate on seed varieties that are more adaptable/ train SHF on hay production for storage
**Supply chain disruptions for imported vaccines**> continue to build out domestic vaccine production capacity

## 7. Evolution beyond 2030

**Scale commercial fodder production,** based on projected market growth

**Scale community breeding programs to continue improvements of the indigenous breed** that have highest adaptability to Tanzania's agro-ecological context

# Flagship 6: Develop traditional cash crops and major food crops through board-led excellence (1/2) – cash crops

## 1. Context

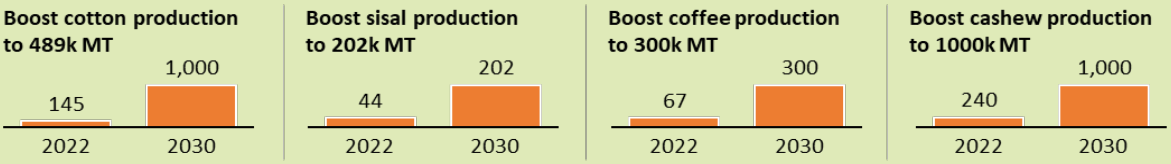
Traditional cash crops accounted for ~$0.5B in exports in 2022/23. These crops are mostly produced by **smallholder farmers** who are generally **organized in cooperatives** for ease of accessing inputs, extension services and markets. These crops generally include 7 crops, each which have their own governing crop board in the country. This flagship focuses on the **4 crops that are believed to have the opportunity to provide the greatest impact** from specific interventions that can be orchestrated and led by crop boards to support smallholders in boosting production, quality and market access. These crops are coffee, cashew nuts, cotton and sisal, which accounted for ~$0.45B in exports in 2022/23

## 2. Key stakeholders

- **Ministries:** MoA, MoLF
- **Gov't agencies:** TCDC, TARI
- **LGAs**
- **Boards:** Cashew Board of Tanzania, Tanzania Coffee Board, Tanzania Sisal Board, Tanzania Cotton Board

## 3. Objectives and KPIs

*Double income obtained from traditional cash crops and major food crops by enabling farmers to meet market requirements to improve quality, grading and productivity through board led orchestration of actors and resources across the value chains*




## 4. Initiatives and costing

Levy Gov PI

| Components | Initiatives | Timeline | Costing (M $USD) |
|---|---|---|---|
| **A. Raise production of Cotton to 1Mn MT** | **A.1 – Orchestrate the cotton value chain across flagships** with a focus on supporting extension services (e.g., developing agronomic standards, maintaining board hired extension service providers), facilitation of input support via ginneries (for sprayers, pesticides, seeds, etc), breeding certified seeds (by coordinating with TARI, TOSCI and ward level seed multipliers) | 24252627282930 | 575 59 633 |
| | **A.2 – Pilot and build business case for spraying cotton farms with drones,** prove effectiveness, financial viability, then facilitate transfer of operations to private player | | 7 7 |
| **B. Raise production of Sisal to 202k MT** | **B.1 – Orchestrate the sisal value chain across flagships** with a focus on facilitating investment in machinery to increase primary processing of sisal leaves, facilitation of input support via cooperatives (e.g., seedlings production and distribution), increasing area under cultivation in previously abandoned estates | | 18 7 25 |
| | **B.2 - Increase secondary processing, local utilization of sisal fiber and byproducts** by exploring and promoting new business opportunities in sisal to private sector | | 5 5 |
| **C. Raise production of Coffee to 300k MT** | **C.1 - Orchestrate the coffee value chain across flagships** with a focus on supporting extension services (by developing agronomic standards, promoting GAP, maintaining board hired extension service providers ), facilitation of input support (e.g., creation of fertilizer credit scheme), production and distribution of seedlings (via TACRI and private seedling producers), intensification of cultivation of existing coffee farms, and establishment of new coffee estates | | 27 58 85 |
| | **C.2** - **Improve coffee quality and value addition** by promoting use of **central pulping units** and establishment of **coffee certification institutions** | | 10 10 |
| **D. Raise production of Cashew nuts to 1Mn MT** | **D.1 - Orchestrate the cashew nut value chain across flagships** with a focus on supporting extension services (e.g., developing agronomic standards, promotion of GAP, maintaining board hired extension service providers), facilitation of input support via cooperatives (e.g. sulfur), production and distribution of seedlings for new and existing plantations, land expansion to create new areas for cashew cultivation | | 54 54 |
| | **Total funds required** | | 633 18 168 819 |

## 5. Key commodities and regions

**Commodities**: Cashew, Cotton, Coffee and Sisal

**Regions**: ***Cotton:*** Simiyu, Mwanza, Geita, Shinyanga, Mara; ***Sisal:*** Morogoro, Tanga, Coast, Kilimanjaro, and Lindi; ***Coffee:*** Kilimanjaro, Kagera, Arusha, Mbeya, Songwe, Ruvuma; ***Cashew:*** Lindi, Mtwara, Pwani, Ruvuma, Tanga and Singida-Manyoni

## 6. Risks and mitigations

- **Market Fluctuations** > Market diversification
- **Resource Accessibility** > Partnership with financial institutions
- **Climate and weather change** > Invest in climate resilient technologies and early warning systems

## 7. Evolution beyond 2030

- Adoption of advanced technology for further processing of traditional cash crops
- Emphasis on sustainability, global market leadership, and fostering a resilient and innovative agricultural sector

# Flagship 6: Develop traditional cash crops and major food crops through board-led excellence (2/2) – food crops

## 1. Context

Major food crops include **maize, paddy, wheat, pulses, cassava, banana, and others**, all of which are mostly produced by **smallholder farmers** who are generally not organized. They tend to have lower income due to **low productivity and limited access to finance, quality inputs, extension services and organized market.** Maize, cassava and banana make up 60% of the total crop production volume in the country, with maize being the most widely planted crop grown by >60% of farming households and responsible for 40% of the country's caloric intake

This flagship **focuses on the role of newly formed Cereals and Other Produce Regulatory Authority (COPRA) in supporting smallholders in their struggle to increase incomes** by ensuring a market environment in which actors across entire value chains of priority crops can enjoy a thriving market by boosting farmer productivity, enforcement of standards, market fairness, transparency and improved export efficiency

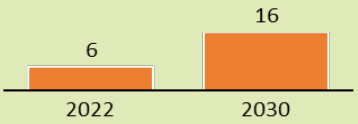
## 2. Key stakeholders

- **Boards:** COPRA, Other crop boards
- **Ministries:** MoA, MIT, MoLF
- **Gov't agencies:** TCDC, TARI, ASA, TOSCI, TFRA, ASLMs, etc
- **LGAs**
- **Private sector:** sector associations, dev't partners, non-state actors, CSOs to complement efforts

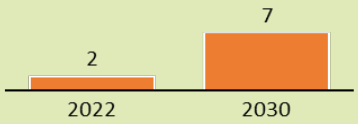
## 3. Objectives and KPIs

*Double income obtained from major food crops by enabling farmers and other actors to meet market requirements to improve quality, grading, productivity and overall fairness and market transparency through board-led excellence*

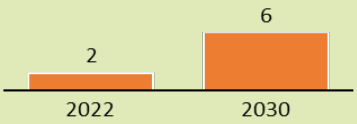
**Boost maize production to 16mn MT**




**Boost paddy production to 7mn MT**

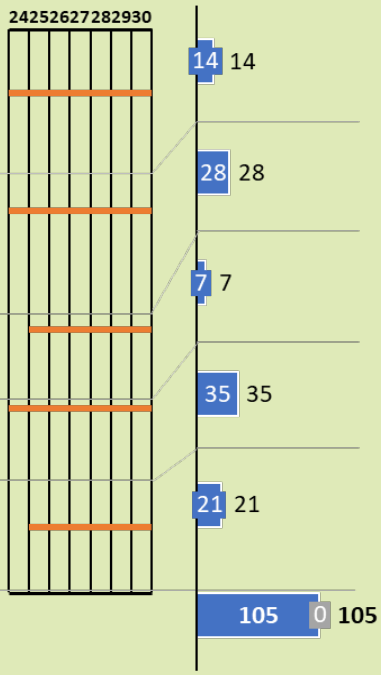



**Boost pulses production to 6mn MT**




## 4. Initiatives and costing

| Components | Initiatives | Timeline | Costing (M $USD) |
|---|---|---|---|
| **E. Grow agricultural production and exports** for cereals and other produce with a focus on maize, paddy, pulses, wheat, sunflower, pulses, soya beans, banana, avocado, cloves | **E.1 - Orchestrate priority value chains across flagships** with a focus on boosting certified seed production, driving farmers & stakeholders' registration, supporting farmer organization, provision of inputs, improved extension, soil mapping, irrigation, agro-processing, export gateways, strategic food reserve, etc) | | 14 |
| | **E.2 - Improve quality of produce** by by developing and enforcing regulatory tools across the supply chain (e.g., warehouse standards, post-harvest infra and processing standards) with a focus on priority crops (e.g., maize grading and aflatoxin tracking) | | 28 |
| | **E.3 - Ensure fairness and efficacy of contract farming** by developing contract farming templates, standardized contract registry, minimum contract terms, to promote increased production, market access and responsible sourcing | | 7 |
| | **E.4 - Create market transparency** through various price discovery mechanisms such as a commodity exchange framework, collection and provision of market intelligence on specific commodities, and other means to promote equitable trade | | 35 |
| | **E.5 - Increase efficiency of export of food crops** through targeted audits of actors and processes that are associated with export gateways and co-creating performance based KPIs that enable improvement of these processes (e.g., time taken to achieve SPS certifications, truck turnaround time at ports, etc.) | | 21 |
| | **Total funds required** | | 105 Gov + 0 PI = 105 |




## 5. Key commodities and regions

**Commodities**: All crop commodities with priority on maize, paddy and pulses

**Regions**: ***Maize:*** All Regions; ***Paddy:*** Morogoro, Mbeya, Shinyanga, Mwanza, Kilimanjaro; **Pulses;** Ruvuma, Simiyu, Mbeya, Lindi, Mtwara, Shinyanga, Kagera, Kigoma

## 6. Risks and mitigations

- **Market Fluctuations** > Market diversification
- **Resource Accessibility** > Partnership with financial institutions
- **Climate and weather change** > Invest in climate resilient technologies and early warning systems

## 7. Evolution beyond 2030

- Structured market systems that provide transparency, ensure fairness and predictability to support growth
- Adoption of advanced technology, emphasis on sustainability, global market leadership, and fostering a resilient and innovative agricultural sector

# Flagship 7: Remove agriculture-specific regulatory barriers to conducting business (incl. exports), and scale AGCOT* model to 4 corridors as an implementation mechanism for policy changes

*SAGCOT has been transformed into AGCOT (Agricultural Growth Corridors of Tanzania)

## 1. Context

New and long-time investors consistently report that the **time and cost of setting up and operating an agriculture business** (incl. exporting) is higher in TZ than in neighboring countries, due to **duplicity of fees/mandates, certification requirements, and limited infrastructure to meet certification requirements**. For example, it can take 2 weeks+ longer to import required equipment/ inputs than in peer countries, and it is common for 3-5 different entities to require licenses and fees for export of the same consignment. Additionally, **unpredictability of the business environment**[1] (including unannounced audits, changes in regulatory requirements, and sudden export bans on specific commodities) **increases risk for private sector entities** and prevents efficient commercial operations.

1. Some unpredictability is not specific to ag.-businesses and are cross-cutting barriers across all industries that will be addressed outside of AMP

## 2. Key stakeholders

- President's Office Planning Commission- POPC (to oversee Blueprint implementation)
- TIC, TRA, OSHA, BRELA, MITI (to facilitate investments, register businesses, and support operations)
- AGCOT (to support expansion of cluster model)
- TNBC Ag. Working Group and TPSF (to elevate private sector interests)
- President's Office PPP Unit (to support deployment of ag.-specific PPPs
- IFPRI (to support with cost/benefit analyses for policy recommendations)

## 3. Objectives and KPIs

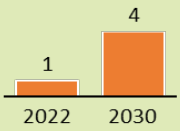
*Commercial ag. players can efficiently start and operate businesses aligned with int'l best practices, facing minimal regulatory hurdles for exporting products and importing necessary inputs, and without concerns about sudden changes in the business environment disrupting operations*

**Decrease duplicity of mandates in export/ import of priority commodities and inputs, to an avg. of 1 mandate**
*E.g., 4 different licenses required to export red meat (MITI, TMB, Chamber of Commerce, DVS)*

**Removal of certifications that are not required by trading partners**
*E.g., certificate of radioactive analysis required for export of tea, coffee, and certain crop varieties*

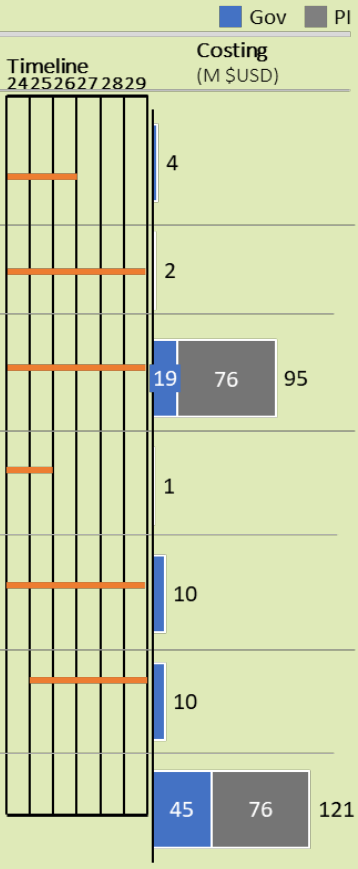
**Increase # of in-country agents/ testing sites to meet ag.-specific export requirements**
*E.g., exporters to Europe hire agents from Kenya (1 month, $4K) to conduct audits for Global GAP certification (only one certification body in TZ today)*

**# of corridors in which AGCOT* is operational**




## 4. Initiatives and costing

| Components | Initiatives | Timeline 24 25 26 27 28 29 | Costing (M $USD) |
|---|---|---|---|
| **A. Reduce duplicity of fees/ mandates and specific export certification requirements** | **A.1 - Mitigate largest ag-specific barriers to conducting business (incl. duplicity of mandates/ fee requirements, TZ-specific export certifications, unpredictability of audits and trade policies), via continuation of Blueprint implementation** for policy and regulatory overhaul across priority commodities | | 4 |
| | **A.2 – Establish consistent dialogue for feedback between private sector and POPC to ensure that Blueprint policy changes are taking effect,** by elevating role of TNBC/ Ag. Working Group | | 2 |
| **B. Scale AGCOT model to strengthen issue resolution, & streamline brokerage** | **B.1 - Scale AGCOT model to 3 new corridors to continue investment brokerage and provision of tailored supports** (e.g., partnership establishment, convenings across stakeholders) | | 19 / 76 / 95 |
| | **B.2 – Streamline resolution of challenges faced by private sector through establishment of central portal for issue resolution,** that is integrated with AGCOT portal and digital channels across other Ministries | | 1 |
| **C. Promote deployment of customized PPPs for agriculture-specific projects** | **C.1.- Strengthen capacity and capabilities to customize PPP proposals for ag-specific projects, to deploy additional PPP agreements** *(Governance, target for # of PPPS, and specific capacity building requirements TBD, based on assessment of existing unit )* | | 10 |
| | **C.2.- Build capacity for customized leasing and contract agreements for agriculture projects, to establish agreements/yr.** (Governance and specific requirements to create unit TBD) | | 10 |
| | Total Funds required | | 45 / 76 / 121 |




*Exact split for costing of activity B.1.. between gov't, dev. partners, and private sector is unknown

## 5. Key commodities and regions

Commodities: Initial focus on poultry, aquaculture, wheat, soya beans

Regions: Nationwide

## 6. Risks and mitigations

**Removed fees are subsequently redirected as new fees to sustain ongoing fee collection**> maintain ongoing POPC oversight of fee collection across Ministries

**Policy changes requiring institutional review are delayed or unsuccessful** > present cost-benefit analyses, review of int'l best practices to strengthen the case for change

## 7. Evolution beyond 2030

**Scale up operations within each AGCOT corridor**, incl. partnership building, convenings, and investment brokerage

**Provide additional capacity support to LGAs to amend by-laws** for doing ag.-business, and ensure consistency of procedures/requirements across LGAs

# Flagship 8: Unlock prerequisites for commercialization of wheat, soya beans, poultry, aquaculture and fertilizers (1/2)

## 1. Context

This flagship strives to accelerate the **development of commercial activities of commodities with highest potential** - wheat, soya beans, poultry, aquaculture and fertilizer - by **unlocking prerequisites, i.e., necessary condition that must be met to attract investment from private sector:**

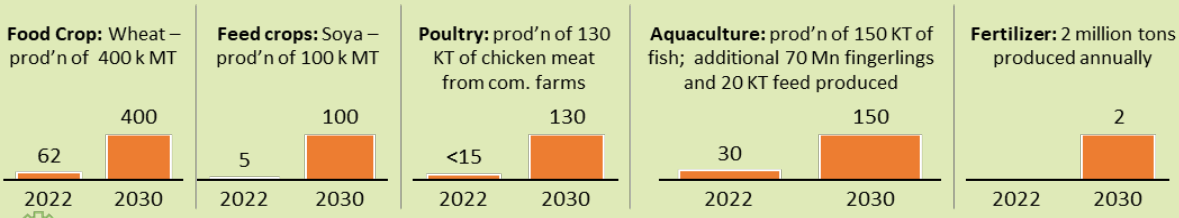
- **Wheat:** staple crop with annual imports of ~1 Mn MT, requiring unlocking of mechanized large-scale commercial farms using improved seeds
- **Soya**: critical crop for livestock feed; mostly (80%) imported
- **Poultry and aquaculture**: environmentally-friendlier animal protein (e.g., carbon emissions of poultry 50% less than dairy), gender-inclusive and potential to incease yield resulting in high growth potential
- **Fertilizer**: critical for crop production, 90% of which is imported as knowledge gap and high prices limit access

## 2. Key stakeholders

- **Ministries:** MoA, MoLF, MoE, for policy formulation, infra dev't
- **Agencies**: TFRA, TPDC
- **Boards:** COPRA for policy formulation, infra dev't
- **LGAs** for policy formulation, infra dev't
- **Research Institutes**: TAFIRI, TALIRI, TARI, etc. for innovation, technology advancement
- **Financial Institutions**: TADB, CRDB Bank, SACCOS, TIC, etc. for funding, inv. facilitation
- **Private sector: Large-scale commercial players**, e.g., Tanlapia Ltd for market expansion, innovation, Itracom, Minjingu, ETG
- **Associations**: FWG, AAT for industry collaboration and advocacy
- **Extension officers** for knowledge dissemination and training, field support and guidance
- **International/ research organizations**: WorldFish, IWMI

## 3. Objectives and KPIs

*Increase commercial production of prioritized commodities by unlocking prerequisites to attract private investment*




## 4. Initiatives and costing

Tax incentives | Gov | PI

| Components | Initiatives | Timeline | Costing (M $USD) |
|---|---|---|---|
| | | 24252627282930 | |
| A. Wheat and soya | **A.1 - Orchestrate land flagship** to identify and allocate up to 200kHa of land for commercial wheat and soya farming | | 14 14 |
| | **A.2 - Conduct market-led identification of preferred wheat and soya seed varieties,** coordinate with TOSCI to facilitate certification, importation of seed volume necessary for commercial farming | | 7 7 |
| | **A.3 - Support the setting up and initial operations of domestic producers** to drive scale and lower cost of operations, for a pre-determined time window – exact policy vehicle to be determined (e.g., derisking financing mechanisms, import quotas, targeted subsidies, etc.) | | 14 14 |
| B. Poultry | **B.1 - Elevate TCPA into primary steering committee,** to consistently liaise with gov't on requirements to scale poultry production and assess shifts in consumer preferences | | 0 0 |
| | **B.2 - Construct 6 feed mills** to produce feed required for breeding stock, DOC, and broiler birds as part of integrated vertical farms (once capacity of existing mills has been met) | | 10 54 64 |
| | **B.3 - Construct 6 breeder farms and hatcheries** amongst existing commercial poultry players, to increase consistent supply of broiler DOC | | 26 144 170 |
| | **B.4 - Establish and scale commercial broiler farms** to produce ~130M tons of broiler chicken meat/ year and prepare them for processing | | 11 60 71 |
| C. Aquaculture | **C.1 - Implement a stronger regulation framework**, including:<br>• Rigorous environmental management principles for cage culture practices, complemented with a robust monitoring system<br>• Certifications to assess fingerlings and fish quality – involvement of TAFIRI | | 1 1 |
| | **C.2 - Develop financial incentives and support:**<br>• Set up a one stop shop to streamline processes (*in ease of doing business flagship*)<br>• Offer preferential loans for investors with guarantees<br>• Provide equipment tax and duty relief (e.g., cages) | | 6 6 |
| | **C.3** - As a pilot project in Lake Victoria, **promote investment opportunities to attract investors (e.g., feasibility studies incl. environmental impact, profitability)** | | 14 1 15 |
| | **C.4 - Rehabilitate, lease 4 existing gov't facilities** (2 hatcheries incl. marine, 2 feed mill) to commercial players through **Public-Private Partnership (PPP) arrangements** | | 3 3 |
| | **C.5 - Replicate the different steps** in Lake Tanganyika and marine water to scale the model | | 4 4 |
| | **Total funds required** | | 50 272 323 |

## 5. Key commodities and regions

**Commodities**: Food Crop: Wheat, Feed Crop: Soya, Poultry, Aquaculture, Fertilizers

**Regions**: **Wheat**: Manyara, Arusha, Kilimanjaro, Mbeya, Njombe, Rukwa; **Soya**: Ruvuma, Mbeya, Njombe, Iringa, Lindi, Mtwara, Songwe, Morogoro, Rukwa; **Aquaculture**: Lake Victoria, Tanganyika and Indian Ocean; **Poultry**: Kilimanjaro, Dar es Salaam, Iringa, **Fertilizers**: all

## 6. Risks and mitigations

- Market volatility > Diversify markets and develop future contracts to stabilize prices
- Disease outbreaks > Rely on Early Warning Systems and develop rapid response protocols

## 7. Evolution beyond 2030

- Scaling up to broader commodities and adapting to climate changes to maintain sustainability and profitability

# Flagship 8: Unlock prerequisites for commercialization of wheat, soya beans, poultry, aquaculture and fertilizers (2/2)

## 1. Context

This flagship strives to accelerate the **development of commercial activities of priority commodities** - wheat, soya beans, poultry, aquaculture and fertilizer - by **unlocking prerequisites to attract investment from private sector:**

- **Wheat:** staple crop with annual imports of ~1 Mn MT, requiring unlocking of mechanized large-scale commercial farms using improved seeds
- **Soya**: critical crop for livestock feed; mostly (80%) imported
- **Poultry and aquaculture**: environmentally-friendly protein solutions (e.g., carbon emissions of poultry 50% less than dairy), gender-inclusive but with lower yield resulting in high growth potential
- **Fertilizer**: critical for crop production, 90% of which is imported as knowledge gap and high prices limit access

## 2. Key stakeholders

- **Ministries:** MoA, MoLF, MoE, for policy formulation, infra dev't
- **Agencies**: TFRA, TPDC
- **Boards:** COPRA for policy formulation, infra dev't
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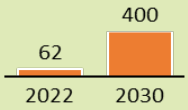
- **Private sector: Large-scale commercial players**, e.g., Tanlapia Ltd for market expansion, innovation, Itracom, Minjingu, ETG
- **Associations**: FWG, AAT for industry collaboration and advocacy
- **Extension officers** for knowledge dissemination and training, field support and guidance

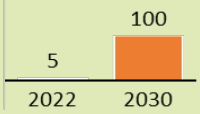
## 3. Objectives and KPIs

*Increase commercial production of prioritized commodities by unlocking prerequisites to attract private investment*

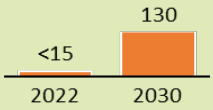
**Food Crop:** Wheat – prod'n of 400 k MT



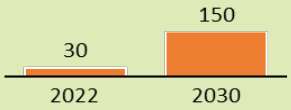

**Feed crops:** Soya – prod'n of 100 k MT



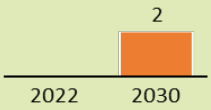

**Poultry:** prod'n of 130 KT of chicken meat from com. farms




**Aquaculture:** prod'n of 150 KT of fish; additional 70 Mn fingerlings and 20 KT feed produced




**Fertilizer:** 2 million tons produced annually




## 4. Initiatives and costing (fertilizers)

Gov | PI | Tax incentives

| Components | Initiatives | Timeline | Costing (M $USD) |
|---|---|---|---|
| D. Fertilizers | **D.1 – Determine requirements, increase access to raw materials not available in Tanzania** such as urea (temporarily, dependent on D5), DAP and mineral of potash/potash chloride by removing administrative bottlenecks with importation | 24252627282930 | 1 / 0 / 0 |
| | **D.2 – Determine requirements, increase access to and conduct feasibility study on the extraction/sourcing of locally available raw materials** including phosphate, lime/dolomite, gypsum, organic waste to ensure there is sufficient supply and access for scaling of blending capacity in the country | | 1 / 1 / 0 |
| | **D.3 – Review policies, for fertilizer pricing, export/import permits, the subsidy program to level the playing field and further increase transparency.** The focus would be to stimulate domestic production, enable local production to become competitive, increase pricing transparency, increase adoption, access to locally available high-quality fertilizer at low cost, ensuring fertilizer security, and enable exports | | 0 / 0 / 0 |
| | **D.4 – Secure investments to expand fertilizer blending capacity** in the country. This is supported by efforts in D1-D3, decision on investment needs (e.g., number of plants, type, etc.) which would inform the type investors to target (e.g., risk appetite, regional focus/experience, etc.). The approach for targeting could include collaborations with e.g., AGRF, Manufacture Africa to set-up deal rooms and linkages to investors. These efforts would be backed-up by detailed fact packs or pitch decks | | 510 / 659 / 0 / 1,169 |
| | **D.5 – Conduct feasibility study on the production of (grey, blue or green) ammonia in the country focusing on the most environmentally friendly raw material sources** including natural gas, by-product of cobalt/nickel extraction, or electrolysis. This is also to be assessed based on environmental impact, pricing, ability to attract capital, adoption by farmers, business model for Tanzania's context, demand and coordination with sectorial ministries (e.g., Ministry of Energy), competitiveness of the sector to inform import vs. produce decision | | 1 / 1 / 0 |
| | **D.6 – Secure investment in ammonia production leveraging resources in the country** to realize urea, ammonium sulfate, or ammonium phosphate, etc., depending on the path selected in D5 including implementation of policies to ensure investment profitability and viability to serve the domestic and regional markets | | D5 dependent |
| | **Total funds required** | | 2 / 659 / 510 / 1,171 |

## 5. Key commodities and regions

**Commodities**: Food Crop: Wheat, Feed Crop: Soya, Poultry, Aquaculture, Fertilizers

**Regions**: **Wheat**: Manyara, Arusha, Kilimanjaro, Mbeya, Njombe, Rukwa; **Soya**: Ruvuma, Mbeya, Njombe, Iringa, Lindi, Mtwara, Songwe, Morogoro, Rukwa; **Aquaculture**: Lake Victoria, Tanganyika and Indian Ocean; **Poultry**: Kilimanjaro, Dar es Salaam, Iringa, **Fertilizers**: all

## 6. Risks and mitigations (fertilizers)

- **Inability to secure investment** for ammonia production > Gov and investors need to collaborate closely to ensure interest are covered
- **Uncompetitive price** of locally produced fertilizers > Details assessment to determine profitability and close collaboration with gov't and investors

## 7. Evolution beyond 2030 (fertilizers)

- Scaling up production of ammonia (production depending on pathway selected)

# Flagship 9: Develop warehouses and market linkages, one agro-industrial processing cluster and specific commodities processing infrastructure

COLD CHAIN & EXPORT COVERED IN ANOTHER FLAGSHIP

## 1. Context

The market infrastructure is inadequate, with **only ~2% of the need covered by improved warehouses and fish landing sites**. The process for procuring raw materials is often **opaque and inefficient**, preventing farmers from accessing **fair prices**. Additionally, there is a **lack of agro-industrial processing cluster**, and the infrastructure for processing certain **commodities is insufficient**; for example, only 10% of cashew nuts are processed, and there is a processing capacity shortfall of 30k MT for sisal.

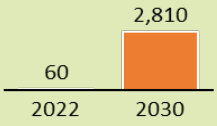
## 2. Key stakeholders

- Warehouse Receipt Regulatory Board
- Tanzania Mercantile Exchange
- EPZA
- SIDO
- Ministry of Trade & Industry, MoA, MLF

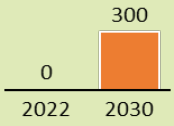
## 3. Objectives and KPIs

*Increase value of agro-processing from $1.5 Bn to $3 Bn by developing warehouses and market linkages, building one agro-industrial processing cluster[1] and specific commodities processing infrastructure*

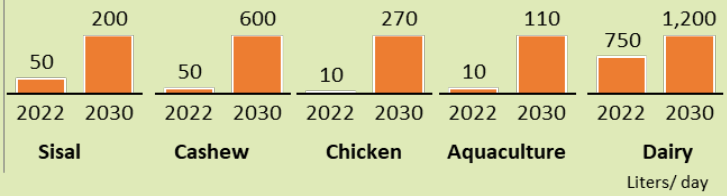
**2,750 warehouses using receipting system** and **trained on Tanzania Mercantile Exchange**




**1 agro-industrial processing cluster**[1] operational, *acres operational*




**Examples of processing capacity increased,** *k MT*




## 4. Initiatives and costing

Gov PI

| Components | Initiatives | Timeline | Costing (M $USD) |
|---|---|---|---|
| | | 24 25 26 27 28 29 30 | |
| **A. Increase warehouses and market linkages between farmers and processors/ traders** | **A.1 - Establish 1,510 reliable and strategically located warehouses**, particularly in areas close to farmers | | 151 |
| | **A.2 - Rehabilitate 1,240 warehouses, and provide 2,750 digital weight scales** to ensure a seamless and transparent process for procurement of raw materials | | 140 |
| | **A.3 - Conduct training workshops** for cooperatives and warehouse systems on the benefits and procedures of **using Tanzania Mercantile Exchange** | | 24 |
| **B. Develop an agro-industrial processing cluster** | **B.1 –** Build a team to conduct a **targeted needs assessment to identify financial investors, build trust and attract them** by designing tailored incentives | | 1 |
| | **B.2 – Collaborate with the private sector by providing economic and fiscal incentives and operational support** to ensure effective operations within these zones | | 0 |
| | **B.3 – Support the infrastructure construction** of the agro-industrial processing cluster (~200 to ~300 acres) | | 116 343 459 |
| **C. Specific commodity processing** | **C.1 – Provide incentives for medium-sized processing enterprises** (e.g., subsidized energy rates) | | 0 |
| | **C.2 – Sisal: set up 45 decorticators (40 private and 5 public)** and ensure accessibility from farmers and warehouses locations | | 2 18 20 |
| | **C.3 – Cashew nuts**: establish an industrial park at Maranje in Mtwara region | | 115 |
| | **C.4 – Chicken:** set up **6 commercial and 6 government-led processing facilities for SHF** to process **260k MT** | | 48 |
| | **C.5 – Fisheries:** Set up 5-10 processing facilities to process **90kMT of aquaculture, incl. seaweed, upgrade fish handling infrastructure** (e.g., landing sites) incl. for **dagaa** | | 28 |
| | **C.6 – Dairy:** establish **10-15 facilities** to increase processing capacity **by ~1.2 million liters per day** | | 30 |
| | **C.7 – Packaging:** establish one **processing factory** | | 2 |
| | **Total funds required** | | 216 801 1,018 |

## 5. Key commodities and regions

**Commodities**: cashew, sisal, chicken, fisheries, dairy and packaging

**Regions**: **Sisal**: Tanga, Morogoro ; **cashew**: Lindi, Mtwara, Pwani, Ruvuma, Tanga and Singida- Manyoni ; **chicken**: Kilimanjaro, Dar es Salaam, Iringa ; **fisheries**: Mwanza, coastline for seaweed ; **dairy**: all

## 6. Risks and mitigations

- Deforestation > Environmental impact assessments
- Waste generation > Invest in waste-to-energy tech.
- Technological obsolescence > Invest in flexible technology solutions that can be upgraded

## 7. Evolution beyond 2030

- Integrate advanced technologies (e.g., AI, IoT)
- Develop other agro-industrial processing clusters and expand further a network of interlinked agro-processing corridors to bolster regional trade

1. Ag-industrial processing clusters focus on large-scale agricultural production, processing, and technological integration to enhance the agricultural value chain

# Flagship 10: Increase regional and international export to $6Bn by enhancing cold chain, airport and seaport capacity and efficiency, including processes

## 1. Context

The **net export value** stands at **$1.2 Bn in 2023**, wile the potential is higher due to:

- **Cold chain facilities** either not **available** (e.g., cold storage for horticulture and meat) or **inadequate** (e.g., insufficient adherence to sanitation measures in abattoirs), coupled with incomplete compliance with SPS, e.g., sesame
- **Insufficient infra. at export hubs**, e.g., limited handling facilities and cold rooms in Mwanza and Songwe, limited electrical plugs and loading machinery at seaports and no capacity for large vessels in fishing harbors
- **Operational inefficiencies**: reliability issues with 1-2 h offloading times at JNIA vs 30 min at JKIA and no preferential treatment for perishables at airports
- **Export processes inefficient:** lengthy and opaque documentation process (e.g., invoices, TIN certificates, export certifications), delays in clearance

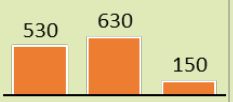
## 2. Key stakeholders

- **Ministries**: MoA, MLF, Works, Transport and Communication
- **Government agencies**: Tanzania Ports and Airports Authority, TFDA, Tanzania Chamber of Commerce, Industry and Ag., TAHA, EPZA, TRA, TIC, COPRA, TMB and TDB
- **Private sector**: cold chain operators
- **Research centers**: IFPRI

## 3. Objectives and KPIs

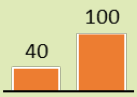
*Increase regional and international agricultural net export to $6Bn by enhancing cold chain, airport and seaport capacity and efficiency, including processes*

**Additional cold chain infra,** *2030 targets*

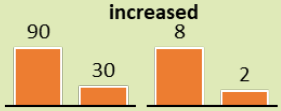



**Infrastructure improved**: **i) airports:** cold room upgraded in Mwanza and built in Songwe ; handling facilities for perishable produce, ii) **seaports**: plugs and loading equipment

**Fishing harbor fully constructed at Kilwa Masoko, %**



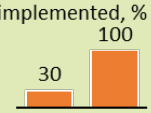

**Export gateways efficiency increased**




**JNI airport offloading time,** *min*

**Waiting time to berth at DeS seaport,** *days*

**Electronic Single Window System (TeSWS)** fully implemented, %




## 4. Initiatives and costing

| Components | Initiatives | Timeline | Costing (M $USD) |
|---|---|---|---|
| **A. Cold chain infrastructure for red meat, poultry, dairy, fisheries, horticulture** | **A.1 –** Enhance **market structure, transparency and traceability** by **setting/ enforcing standards** (e.g., transport, conservation) | 24 25 26 27 28 29 30 | 0 – 0 = 0 |
| | **A.2 –** Introduce incentives such as **tax breaks** for private-sector to invest in **refrigerated vehicles** | | 10 – 44 = 53 |
| | **A.3 -** Introduce incentives such as **tax breaks** for private-sector to invest in **refrigerated storage containers and cold rooms** | | 155 – 34 = 189 |
| **B. Seaport and airport infrastructure, i.e., capacity and operations** | **B.1 – Infrastructure: Seaport:** Increase number of **plugs for reefer containers**[1] and **loading equipment ; Airport: upgrade cold room** at Mwanza and **build one** in Songwe | | 80 – 0 = 80 |
| | **B.2 –** Implement a **dedicated center for expedited services for fresh produce at major airports and seaports**, focusing on faster clearance and quality checks for exports and ii) offer **services for perishable produce** in all airports (e.g., cargo wrapping) | | 4 – 0 = 4 |
| | **B.3 –** Construct **fishing harbor** at **Kilwa Masoko** in **Lindi region**, with a capacity to handle **~60k tons of fish** per year | | 66 – 0 = 66 |
| | **B.4 –** Continue and enhance implementation of the **Electronic Single Window System (TeSWS)** to allow trade stakeholders to interface electronically | | 4 – 0 = 4 |
| **C. Export processes efficiencies to improve customs speed/ experience/ reliability** | **C.1 – Provide capacity building for law enforcers** (e.g., TRA, Police, Immigration) **and actual players** (e.g., farmers, logistics companies) **on perishable products value chain and handling** | | 6 – 0 = 6 |
| | **C.2 –** Build a team to **i) conduct export market researches** and ensure coordination with extension services and trade agreements, ii) build and implement **actionable guidelines for adhering to Sanitary and Phytosanitary Standards (SPS) agreements** | | 2 – 0 = 2 |
| | **Total funds required** | | 201 (Gov) + 199 (PI) = 404 |

## 5. Key commodities and regions

**Commodities**: cold chain infrastructure for red meat, poultry, dairy, fisheries and horticulture

**Regions**: **high value vegetables:** mainly in Northern Highlands ; **red meat and dairy**: Tanga, Arusha, Mwanza ; **poultry**: Kilimanjaro, Dar es Salaam, Iringa ; **fisheries**: Mwanza and coastline

## 6. Risks and mitigations

- Dual economy > Ensure consumers benefit from global market integration
- Market changes > Flexible policies to meet international standards and demands

## 7. Evolution beyond 2030

- Incorporate advanced technologies, e.g., AI-driven logistics, blockchain for traceability, and energy-efficient storage solutions

# Flagship 11: Digitalize farmer/stakeholder registration and agriculture ecosystem to improve farmer support

## 1. Context

**MoA & MLF faces challenges in accessing comprehensive, quality and timely data for effective decision making and targeted farmer support**. Agricultural data is fragmented and mostly inaccessible. Farmers lack access to basic market intelligence, struggle with insufficient agricultural extension services, are unable to access weather forecasting and other types of information that are essential to plan and support a successful cultivation season. Additionally, lack of transparency and accountability among different stakeholders in the agriculture sector limits fairness and creates unpredictability, which limits overall growth

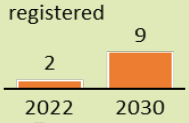
## 2. Key stakeholders

- **Ministries:** MoA, MLF, MoF, MICICT to implement policies and sectoral coordination
- **LGAs:** to facilitate local-level program execution
- **Private sector:** technology providers, agribusinesses, telecoms, digital hubs and financial institutions
- **Dev Partners:** IFAD, FAO, USAID, AGRA

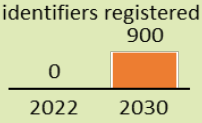
## 3. Objectives and KPIs

*Enable data driven decision making and policy interventions to ensure targeted and effective farmer support through enhanced extension support, dissemination of market intelligence, and other types of information that are essential for smallholders to plan and execute a successful cultivation season*

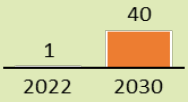
**9Mn farmers** with unique identifiers registered



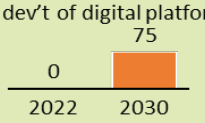

**900k stakeholders** with unique identifiers registered



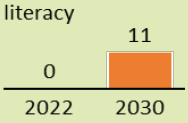

**40 systems** interlinked and interoperable




**75 personnel hired** to support operation, dev't of digital platform




**11K personnel trained** in digital literacy




## 4. Initiatives and costing

| Components | Initiatives | Timeline | Costing (M $USD) |
|---|---|---|---|
| | | 24252627282930 | Gov / PI |
| A. Develop the foundational infrastructure for digitalization | **A.1 – Develop a comprehensive farmer & stakeholder registry** as the cornerstone of all digitalization initiatives, aimed at enhancing production, productivity, and income for smallholder farmers. | | 91 |
| | **A.2 – Strengthen digital data interoperability, flow, use in agriculture** by establishing a comprehensive data strategy, incl. digital architecture, development, integration of current digital systems (such as kilimo dashboard, ATMIS, ARDS, etc.) and a controlled testing environment to enhance data integration, quality, and innovation | | 2 |
| B. Build institutional capacity and governance for digitalization | **B.1 - Enhance the Ministry of Agriculture's coordinating office** with the necessary tools and skilled personnel to facilitate strategy implementation. | | 2 |
| | **B.2 – Create operational tools,** including TORs, procedures, and guidelines, to ensure a well-structured and organized approach to executing the strategy. | | 1 |
| | **B.3 – Put in place the proposed governance framework** to oversee and support the implementation of the strategy, ensuring clear roles, responsibilities, and decision-making processes. | | 1 |
| C. Roll out use cases | **C.1 – Build on and improve the current fertilizer subsidy platform** to include provision of other inputs such as seeds, pesticides, mechanization, irrigation, etc. | | 1 |
| | **C.2 – Integration of M-kilimo, farmer call center, farmer/stakeholder registry** and other existing digital extension services to provide comprehensive extension support to farmers | | 1 |
| | **C. 3 – Select one or two use cases** based on a specific criteria (e.g. value chain, region) to build, pilot the application of digitalization to demonstrate impact, further refine the platform and scale up across other regions and commodities | | 9 |
| D. Scale up and expansion | **D.1 – Enhance rural digital access** through infrastructure procurement, cost-effective device partnerships with MNOs, and ICT facility establishment in agricultural centers. | | 1 |
| | **D.2 - Cultivate digital innovation in agriculture** by creating an innovation fund, establishing a collaborative platform, and offering capacity-building for youth-focused initiatives | | 1 |
| | **Total funds required** | | 91 |

## 5. Key commodities and regions

**Commodities**: All, across crops, livestock and fisheries

**Regions**: All

## 6. Risks and mitigations

- **Data privacy and security** > Clear data guidelines and governance framework
- **Access to technology and digital literacy** > target government programs to boost literacy
- **Inadequate technological infrastructure** > encourage private sector investment
- **Farmer acceptance and behavioral change** > use extension officers to drive adoption and ensure strong value proposition for farmers

## 7. Evolution beyond 2030

- Growth and integration of private sector led digital platforms that can provide specialized farmer support
- Growth in digital ecosystem that is fueled by innovation from new startups led by youth and women

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# Flagship 12: Boost coverage and quality of extension services via the establishment of an operational supports fund, hiring of new agents, scaling of digital extension, and required refresher programs

## 1. Context

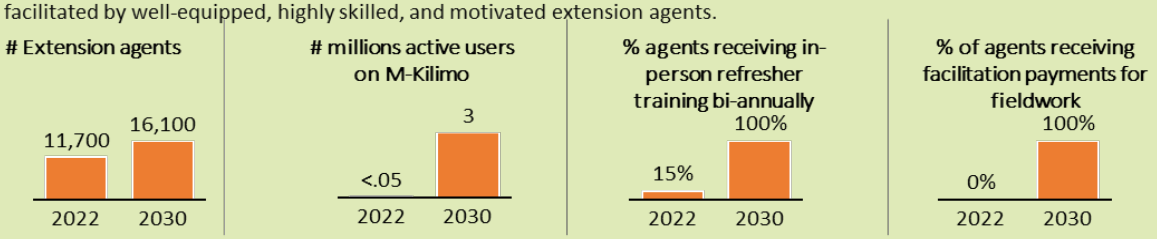
While **extension agents are proven to play a critical role in improving smallholder productivity,** extension services are severely **underfunded**, characterized by budget consistencies that impede multi-year planning**. There are ~11K extension agents today** (across crops, livestock, and fisheries), **however less than 10% of all agriculture households receive extension services.** Many agents **don't have sufficient supports for fieldwork** (e.g., 40% don't have motorbikes and <50% have tablets) and have **limited incentives and oversight mechanisms to provide quality services to smallholders.** Additionally, agents have **limited opportunities to engage in ongoing trainings** for updated content expertise and to practice problem-solving skills.

## 2. Key stakeholders

- LGAs (to coordinate agents and disbursement of operational supports)
- Universities and MoA/MLF training institutions (to deliver refresher trainings)
- MoA and MLF (to oversee entire extension system and support LGAs)

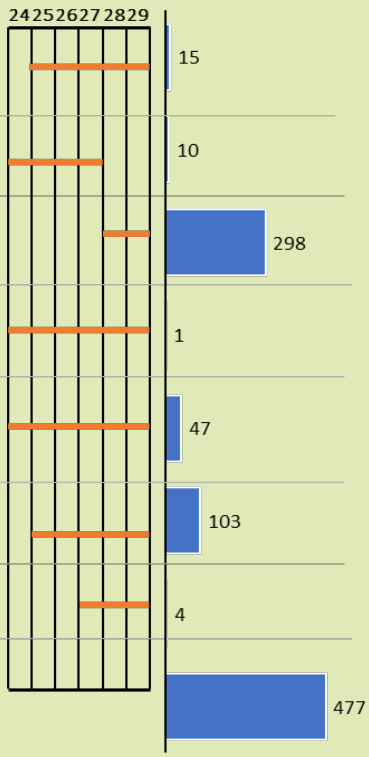
## 3. Objectives and KPIs

Every smallholder in need of extension services can swiftly access reliable, high-quality physical and/or digital assistance facilitated by well-equipped, highly skilled, and motivated extension agents.




## 4. Initiatives and costing

| Components | Initiatives | Timeline | Costing (M $USD) |
|---|---|---|---|
| **A. Scale quality and quantity of extension services** | **A.1 - Establish best-in-class refresher training program,** via creation of 40+ online video refreshers and bi-annual in-person refresher courses | | 15 |
| | **A.2 – Improve user experience and interoperability of M-Kilimo platform** to improve usability and increase extension coverage for 3M+ farmers | | 10 |
| | **A.3 - Hire 4.4K additional extension officers**, in regions where shortage is most severe and production of prioritized commodities is high | | 298 |
| **B. Establish operational supports fund to equip agents for success** | **B.1 - Establish operational supports task force**, to monitor ongoing needs of agents (e.g., motorbikes, tablets) and to support institutionalization of extension supports fund | | 1 |
| | **B.2 - Procure and disburse motorbikes, tablets, vet kits, soil testing kits, and other required kits** to meet current shortage, to replace old items, and to support annual new hires | | 47 |
| | **B.3 - Establish and implement system for facilitation payments** (lunch, fuel) for agents to execute field duties | | 103 |
| | **B.4 - Research and establish system for performance-based incentives and accompanying monitoring system** to improve extension visit quality | | 4 |
| | Total Funds required | | 477 |




## 5. Key commodities and regions

Commodities: Horticulture, cotton, cashew, maize, sisal, coffee, paddy, sunflower, sesame, dairy, aquaculture, poultry, red meat

Regions: Nationwide (initial focus on Arusha, Kilimanjaro, Morogoro, Dodoma, Iringa, Njombe, Tanga, Mbeya, Kigoma, Mwanza, Kagera, Simiyu, Mtwara, Tabora)

## 6. Risks and mitigations

**High investment into enhanced digital extension platform, but uptake is low/slow>** pilot specific digital applications before overhauling entire digital system

**Limited incentives/ quality checks for agents, despite being equipped with operational supports** > explore non-financial incentives to boost motivation (e.g., local recognition) and quality assurance mechanisms to enforce baseline standards (at a minimum)

## 7. Evolution beyond 2030

**Assess long-term sustainability of pool of funds for operational supports** (i.e., how funds are collected and where they sit), to determine if funds should be collected from alternative revenue sources/ sit in different gov't dept.

**Scale up digital extension services** to boost extension coverage and reduce reliance on physical agents

**Expand ecosystem of gov't and private extension services** (e.g., through BBT training of youth for private extension)

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# Flagship 13: Provide access to financing to 1.7 Mn beneficiaries in groups and 30k SMEs through increased distribution networks, adapted products and risk-sharing mechanisms

## 1. Context

Agriculture contributes ~30% to Tanzania's GDP but attracts only **9% of financing.** This disparity is partly due to **financial exclusion** affecting 60% of stakeholders and 80% of SHF, due to:

- **High level of risk and insufficient returns** due to **lack of collateral and lack of scale**
- **Limited access to relevant data** (e.g., inadequate financial records) for MNOs, banks and insurers to make informed lending decisions
- **Inadequate products** (loans and insurances) **failing to cater to agriculture's unique requirements** (e.g., seasonal nature)

**Informal credit services** like SACCOs and digital solutions are prevalent, yet **interest rates remain high** (9-12%). Some **risk sharing mechanisms** have shown success in mitigating risks for commercial banks and could be **expanded** (e.g., SCGS[1])

## 2. Key stakeholders

- **Regulatory bodies:** Bank of Tanzania, Tanzania Insurance Regulatory Authority (TIRA)
- **State-owned development finance institution:** Tanzania Agricultural Development Bank (TADB)
- **Commercial banks:** CRDB Bank, NBC, NMB
- **Tanzania Cooperative Development Commission (TCDC)** and licensed SACCOS
- **Mobile Network Operators (MNO) with digital platforms,** e.g., Vodacom (M-Kulima)
- **Non bank financial institutions/ facilitators:** Financial Sector Deepening Trust (FSDT), PASS, African Guarantee Fund (AGF)
- **Development partners**, e.g., IFAD, World Bank

## 3. Objectives and KPIs

*Increase access to finance for 1.7 Mn SHF and 30k SMEs through increased distribution networks, adapted products and risk-sharing mechanisms*

**1.7 Mn farmers** benefitting from loans through credit guarantee schemes

**30k SMEs** benefitting from loans through credit guarantee schemes

**Focus on 9 high demand commodities**: horticulture, cotton, cashew, coffee, paddy, sunflower, aquaculture, dairy, poultry

## 4. Initiatives and costing

Gov PI

| Components | Initiatives | Timeline | Costing (M $USD) |
|---|---|---|---|
| | | 24 25 26 27 28 29 30 | |
| **A. Improve financing enabling environment** | A.1 - Establish a working group incl. **financial banks, insurers and regulators (i.e., BoT and TIRA)** to work on **Regulations, Guidelines and Circulars** that would enable financial institutions to **design appropriate banking and insurance products specific to agriculture** (e.g., interest rates, temporality, insurance conditions) | | 1 |
| | A.2 - Establish **one focal point to coordinate** all the different **risk sharing and de-risking instrument for ag lending** in Tanzania and make sure they **deliver the most impact** | | 1 |
| | A.3 - **Interconnect digital ecosystem sharing with mobile network operators (MNOs) and banks** in order to enable and facilitate data access (incl. identification and profiling) on farmers to facilitate access to financing | | 2 |
| **B. Provide access to financing to 1.7 Mn beneficiaries in groups (farms, ponds and cages, livestock areas)** | B.1 - Support SHF in the **improvement of their credit score:** i) Set up a team to build **enforcement mechanisms, i.e., ensure value chains are cashless to improve credit score of SHF** (in collaboration with Boards), ii) scale **AgriGRADE approach** | | 1 |
| | B.2 – **Capacitate community banks and AMCOs to establish and manage SACCOS** by providing comprehensive training, regulatory guidance, and technical assistance and **support SACCOS to finance agriculture** | | 8 |
| | B.3 - Increase **TADB wholesale** by collaborating with 8 financial institutions to **lend** to **35k Smallholder Farmers (SHF)** through loans with interest rates ranging from 5% to 7% | | 11 |
| | B.4 - Provide access to financing to **1.7 Mn beneficiaries** by expanding **Smallholders Credit Guarantee Scheme (SCGS)**[1] providing Partner Financial Institutions (PFI) with a **50% credit risk guarantee for SHFs**[2] (producing horticulture, cotton, cashew, coffee, paddy, sunflower, aquaculture, dairy, poultry) | | 40 1,020 1,060 |
| **C. Provide access to financing to 30k SMEs** | C.1 - **Provide loans to 12,000 SMEs under BBT** and **3,000 larger SMES in incubators by expanding existing incentive mechanisms** (e.g., African Guarantee Fund (AGF)) providing acceptable collateral by sharing the risks with banks (average loan of USD ~6k) | | 7 90 97 |
| | C.2 - **Provide loans to 15,000 SMEs by increasing uptake for SMEs products** (e.g., Aceli Africa) including origination subsidies for smaller agricultural loans for SMEs as well as a first loss guarantee facility | | 7 90 97 |
| | **Total funds required** | | 77 1,200 1,277 |

## 5. Key commodities and regions

**Commodities**: horticulture, cotton, cashew, coffee, paddy, sunflower, aquaculture, dairy, poultry

**Regions**: Nationwide, starting with Dodoma (BBT), Southern Highlands (horticulture), Northern zone (dairy)

## 6. Risks and mitigations

- Risk of default > Implement stringent credit assessments and offer financial literacy programs to reduce the likelihood of loan defaults

## 7. Evolution beyond 2030

- Equity participation in ag companies (post 2025)
- Digital expansion: further embed financing in digital and mobile platforms for wider reach
- Green financing: shift towards loans for eco-friendly and climate-adaptive agriculture

1. Government-led guarantee funds of USD 25 Mn fund aimed at de-risking and providing liquidity to banks and fin. institutions to catalyze financing for smallholder farmers and agri-SMEs providing commercial banks with a 50% credit risk guarantee
2. Once the two first loans have been successful, SHF improvement of credit score increases access to finance

# Flagship 14: Sustainably unlock 1.5Mha for commercial agriculture and 1.2Mha land ownership for smallholders

## 1. Context

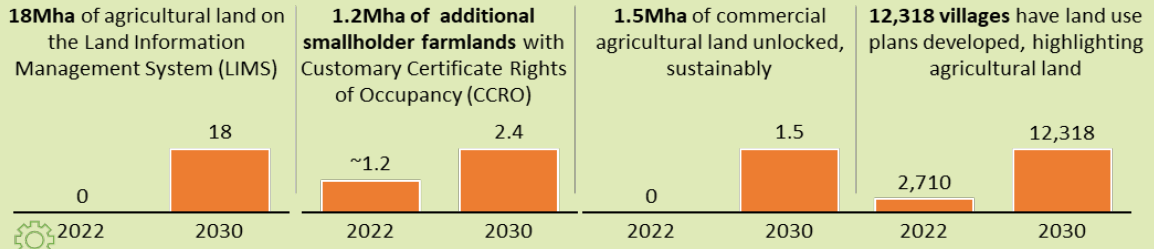
**Detailed understanding of use and availability of agricultural land is limited as only 22% of villages have land use plans**. This leads to instances where high **potential agricultural land is deployed for other uses** e.g., residential areas or the **inability to direct investors to suitable commercial agricultural land or planning for agricultural land use in the country** which have negative impacts on the sector. Furthermore, delayed official land demarcation and limited access to land rights certificates contributes to **encroachment, land disputes, conflicts** which impedes sense of security to invest in land for the long-term which in turn limits the growth of the sector.

## 2. Key stakeholders

- **LGAs:** to provide support with land use planning implantation and issuance of CCROs
- **Ministries:** MoA, MoLF, MoL to implement and coordinate
- **Private sector:** (e.g., OMDTZ) to provide expertise on GIS mapping, visualization, etc.
- **Donors:** (e.g., USAID) to complement funding, expertise, etc.

## 3. Objectives and KPIs

*1.5 million ha and 1.2 million ha unlocked for commercial agricultural activities and smallholders respectively incentivizing long-term investments. Completed land use plans create a path for smallholders to access CCROs which they benefit from.*




## 4. Initiatives and costing

Gov PI

| Components | Initiatives | Timeline | Costing (M $USD) |
|---|---|---|---|
| **A. Create a database of agricultural land in Tanzania** | **A.1 - Develop requirements, IT backend, policy and legal framework** for developing the agriculture LIMS in line with use cases in components B and C | 24 25 26 27 28 29 30 | 7 7 |
| | **A.2 - Digitize existing land use plans, conduct detailed mapping of allocated** but unused agricultural land and **execute national high-level mapping** of land being used for agricultural purposes | | 28 28 |
| | **A.3 - Unlock agricultural land by setting-up multisectoral teams across MoL, MoA, MoLF, VPO-Environment, LGAs, etc.** to provide technical expertise, convening for a, etc. required to execute land use plans, and **deploying appropriate financial resources** to increase pace of execution of land-use plans | | 58 58 |
| **B. Create a path for security and commercializati on for smallholder farmers though land access** | **B.1 - Create a multisectoral technical team to facilitate efforts to secure CCROs primarily for women and youth** and to provide education on the process and benefits of securing CCROs | | 240 7 247 |
| | **B.2 - Develop and implement policies to bolster the security of agricultural land** from encroachment and the resolution of dispute regarding ownership, contracting, etc. | | 2 2 |
| **C. Make agricultural land accessible for agriculture focused investment and commercial activities** | **C.1 - Design policy** framework which would facilitate **standardized sub-leases and sale of land** to investors and **access to permits** for aquafarming led by MoA, MoLF and Local Government Authorities | | 0 0 |
| | **C.2 - Pilot and scale land banking** by acquiring 1.5Mha of land (leveraging TIC where appropriate), digitizing its details on the LIMS, and making it accessible to investors including online | | 434 16 450 |
| | **Total funds required** | | 536 256 792 |

## 5. Key commodities and regions

**Commodities**: All commodities with a focus to unlock land for Cashew, sisal, coffee, wheat, soya beans, sesame, pasture, seed production, and aquaculture

**Regions**: All regions, but priority for Kageria, Arusha, Simiyu, Rukwa, Mara and Njombe

## 6. Risks and mitigations

- Risk of land grabbing/displacement of other land users especially due to competition e.g., urbanization > Ensuring the participation of village representatives and utilization of land use plans
- Risk of poor data quality > Investing in ground truthing

## 7. Evolution beyond 2030

- Ensuring smallholders, especially women and youth have land rights and building on land use data to ensure it's up-to-date and widely available for decision making

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# Flagship 15: Enhance food security through strengthened warning systems, strategic food and feed reserves and emergency response, as well as fish Monitoring, Control, and Surveillance (MCS)

## 1. Context

Food systems are increasingly **impacted by shocks** such as extreme weather and disease outbreaks, yet there's a **lack of preparedness** to address these risks and protect vulnerable households. The Early Warning Systems remain **undigitized, suffering from poor data quality**, hindering both **internal** (e.g., crop yields, forecasts, shocks) and **external** (trade partners' data) analyses. Additionally, there's an absence of **emergency response readiness**, characterized by no **feed reserves** and a **shortage of clear guidelines and procedures**. The **Monitoring, Control, and Surveillance (MCS) of fisheries** is also inadequate, compounded by **weak enforcement mechanisms**.

## 2. Key stakeholders

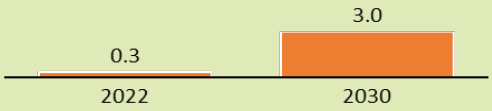
- **Ministries:** MoA, MLF
- **Prime Minister Office** to implement policies and sectoral coordination
- **Government agencies:** National Food Reserve Agency (NFRA) to guarantee national food security
- **LGAs** to facilitate procurement with farmers through buying points
- **Other:** Vice President's Office of the Environment, National Carbon Monitoring Centre

## 3. Objectives and KPIs

*Enhance food security and resilience through a fully operational system monitoring internal and external early warnings, a strategic food and feed reserve and a fish Monitoring, Control, and Surveillance (MCS) system*

**Fully operational system monitoring internal and external early warnings**

**Strategic food reserve** (maize, paddy, sorghum and a new commodity: sunflower), *Mn MT*




**Fish Monitoring, Control, and Surveillance (MCS) enforcement mechanism** fully operational

## 4. Initiatives and costing

| Components | Initiatives | Timeline | Costing (M $USD) |
|---|---|---|---|
| **A. Strengthen warning system, i.e., data management tool with alerts** | **A.1 - Strengthen the Early Warning System**[1] (e.g., Crop yield and Production Forecasts, Crop Monitoring, outbreak, drought risk), with an automated integration of external marketing Early Warnings (e.g., prices, export bans from trade partners) - to be integrated to the "digital information system" in the Prime Minister's Office Disaster Management Department[2] | 24 25 26 27 28 29 30 | 14 |
| | **A.2 - Establish a unit to inform decisions** based on agricultural and Food Security data and Statistics interpretation and forecasts | | 2 |
| | **A.3 - Ensure coordination between local, district, national levels, incl. different Ministries**: implement a training program, train at least 75% of relevant personnel across involved ministries, local governments on tool | | 5 |
| **B. Enhance the strategic food reserve, including an emergency response mechanism (guidelines and SOP)- to review existing guidelines** | **B.1 - Expand and upgrade grain storage facilities, technologies** to increase capacity by 10X and integrate advanced food stocks mgmt. technologies | | 90 |
| | **B.2 - Expand Food Reserve Agency to include feed** as a standalone entity or in collaboration with Ministry of Livestock or another entity | | 10 |
| | **B.3 -** Develop digital **operational guidelines** for **MoA and MLF** quick emergency response in case of hazards affecting agriculture as well as **Standards Operating Procedures (SOP)** (i.e., roles, responsibilities and legal basis for actions) **for the PMO coordination response** | | 1 |
| **C. Ensure stable fish stock by reinforcing Monitoring, Control and Surveillance** | **C.1 - Design and strengthen the implementation of policies** to limit destructive fishing practices (e.g., breeding seasons) | | 2 |
| | **C.2 - Establish and implement a stronger enforcement mechanism system** for Monitoring, Control and Surveillance (MCS) of fish stock | | 27 |
| | **Total funds required** | | 151 |

Gov PI

## 5. Key commodities and regions

**Commodities**: maize, paddy, sorghum (increased volume) and sunflower (new commodity)

**Regions**: food reserves close to producing regions and ports

## 6. Risks and mitigations

- Poor data quality and segmented access due to disparate sources > Implement a centralized data integration platform
- No adequate budget > allocate a dedicated fund in case of emergency

## 7. Evolution beyond 2030

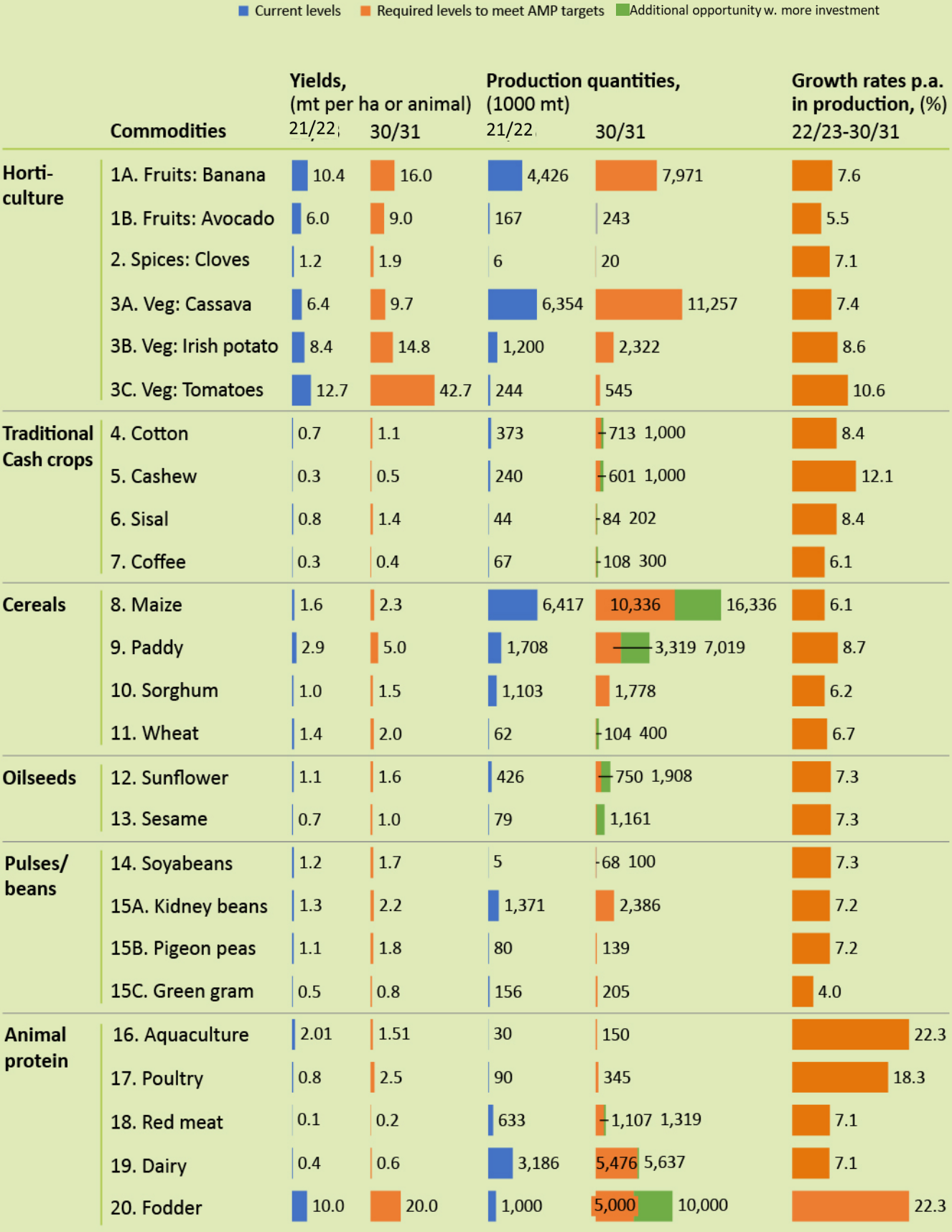
- Expanded food reserves with new commodities and enhanced regional collaboration
- Integration of technological and analytical advancements for proactive risk management

1. The system needs to be fully set up based on the decisions that need to be made
2. Along with the other warning systems as PMO is in charge of coordination of i) meteorological forecasts from the Ministry of Water and the Tanzanian Meteorological Agency (TMA) through Multi-hazard early warning service (MHEWS), ii) Geological Survey of Tanzania (GST), iii) Min. of Health (Event-Based Surveillance), iv) Department of Nutrition and Food Security - Early Warning section

## D. Deep dives into the 20 commodities

A detailed analysis has been done for the 20 prioritized commodities to assess their growth potential as a result of the 15 flagships. This has been summarized on a one-pager per commodity with the context, targets, interventions, suitability, risks and mitigations, and evolution beyond 2030. For certain commodities, two targets have been provided, one which is needed to achieve the ambitions 2030 and another one which shows a potential further increase as a result of additional focus and investment. The methodology of the suitability analysis can be found in Annex (6H: Crop suitability analysis).

# Impact of the AMP on the prioritized commodities




| | Commodities | Yields, (mt per ha or animal) 21/22 | 30/31 | Production quantities, (1000 mt) 21/22 | 30/31 | Growth rates p.a. in production, (%) 22/23-30/31 |
|---|---|---|---|---|---|---|
| Horti-culture | 1A. Fruits: Banana | 10.4 | 16.0 | 4,426 | 7,971 | 7.6 |
| | 1B. Fruits: Avocado | 6.0 | 9.0 | 167 | 243 | 5.5 |
| | 2. Spices: Cloves | 1.2 | 1.9 | 6 | 20 | 7.1 |
| | 3A. Veg: Cassava | 6.4 | 9.7 | 6,354 | 11,257 | 7.4 |
| | 3B. Veg: Irish potato | 8.4 | 14.8 | 1,200 | 2,322 | 8.6 |
| | 3C. Veg: Tomatoes | 12.7 | 42.7 | 244 | 545 | 10.6 |
| Traditional Cash crops | 4. Cotton | 0.7 | 1.1 | 373 | 713 1,000 | 8.4 |
| | 5. Cashew | 0.3 | 0.5 | 240 | 601 1,000 | 12.1 |
| | 6. Sisal | 0.8 | 1.4 | 44 | 84 202 | 8.4 |
| | 7. Coffee | 0.3 | 0.4 | 67 | 108 300 | 6.1 |
| Cereals | 8. Maize | 1.6 | 2.3 | 6,417 | 10,336 16,336 | 6.1 |
| | 9. Paddy | 2.9 | 5.0 | 1,708 | 3,319 7,019 | 8.7 |
| | 10. Sorghum | 1.0 | 1.5 | 1,103 | 1,778 | 6.2 |
| | 11. Wheat | 1.4 | 2.0 | 62 | 104 400 | 6.7 |
| Oilseeds | 12. Sunflower | 1.1 | 1.6 | 426 | 750 1,908 | 7.3 |
| | 13. Sesame | 0.7 | 1.0 | 79 | 1,161 | 7.3 |
| Pulses/ beans | 14. Soyabeans | 1.2 | 1.7 | 5 | 68 100 | 7.3 |
| | 15A. Kidney beans | 1.3 | 2.2 | 1,371 | 2,386 | 7.2 |
| | 15B. Pigeon peas | 1.1 | 1.8 | 80 | 139 | 7.2 |
| | 15C. Green gram | 0.5 | 0.8 | 156 | 205 | 4.0 |
| Animal protein | 16. Aquaculture | 2.01 | 1.51 | 30 | 150 | 22.3 |
| | 17. Poultry | 0.8 | 2.5 | 90 | 345 | 18.3 |
| | 18. Red meat | 0.1 | 0.2 | 633 | 1,107 1,319 | 7.1 |
| | 19. Dairy | 0.4 | 0.6 | 3,186 | 5,476 5,637 | 7.1 |
| | 20. Fodder | 10.0 | 20.0 | 1,000 | 5,000 10,000 | 22.3 |

Numbering has been done for ease of reading through the commodity pages. It does not however reflect any further prioritization between the commodities.

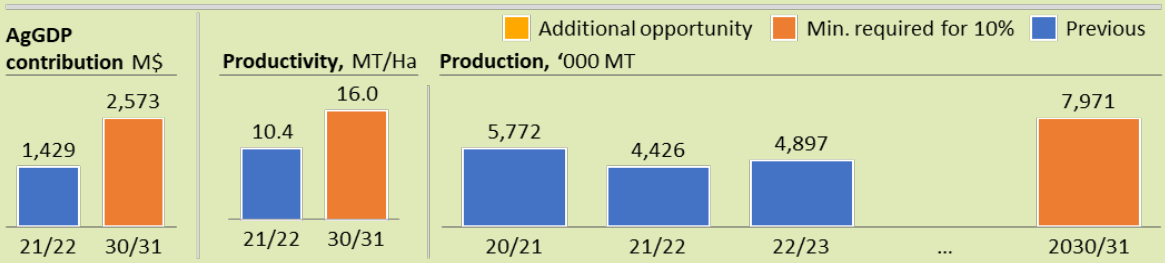
1. Feed convertion ratio: feed/ weight - Baseline productivity and increases in productivity will depend on animal breed

# Commodity 1A: Fruits - Banana

## 1. Context

- **Tanzania is one of the largest banana producers in Africa**, with production concentrated around Lake Victoria and the north. Banana, a staple crop that is highly consumed in the country and has strong export potential, has seen strong production growth recently. Exports reached ~23,000 MT between 2020/21 and 2022/23. The value chain has recently seen improvements in planting material, larger farms, new planting areas (e.g., in coastal areas) and improved techniques (e.g., drip irrigation). There is significant opportunity to expand export potential with better quality control to other regions including the middle east.
- **Challenges**: Diseases are a critical challenge, particularly the Banana Bunchy Top Virus, which affect most farmers and threatens some varieties (e.g., East African Highland) with extinction. Banana also suffers from low productivity due to stagnating soil fertility, poor water management and reliance on traditional varieties. Additionally, inefficiencies in harvesting, handling, storage and transportation, along with poor infrastructure, facilities and quality control lead to post-harvest losses of ~20%.

## 2. Targets




## 3. Interventions

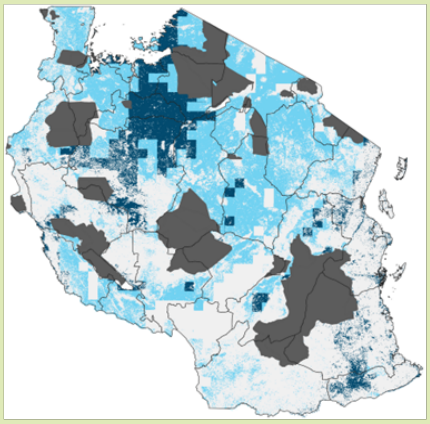
- **Develop, harmonize, and institute enforcement mechanisms of agronomic, storage, and processing standards and guidelines,** establish contract farming mechanisms to protect parties and encourage investments, develop structured market systems across the value chain *(Flagships 6, 12)*
- **Improve productivity through provision of quality extension services**, and tailored input use enabled by digital farmer registration and farmer organization to build farmer capacity in soil, water and integrated pest management *(Flagships 6, 11, 12)*
- Increase **access to domestic and international markets** though organized linkages to markets, removing trade barriers, creating market transparency, access to warehouse/storage facilities and processing capacity *(Flagships 9, 10, 11, 13, 15)*
- **Boost production, utilization and adoption of improved varieties** by smallholders to increase productivity, and resiliency to disease, pests and climate change *(Flagships 2, 6, 12)*

## 4. Regional suitability

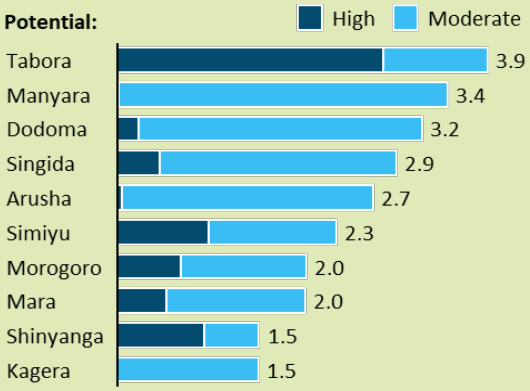
### Agronomic suitability of banana in Tanzania

**Suitability under rain-fed conditions:**

Unsuitable | High | Moderate | Protected areas



### Suitable area in regions, (million ha)




**Banana production has moderate suitability** in large parts of Tanzania, with the highest suitability in Tabora, Manyara and Dodoma (>3.1 million hectares)

## 5. Risks and mitigations

- **Climate change, pests** > Utilization and adoption of improved varieties
- **Water shortages** > Expansion of drip irrigation techniques
- **Low user adoption of new varieties, practices** > Mobilizing extension and local government systems
- **Overproduction** leading to market saturation > Coordination of the key players in the industry
- **Lack of a robust data-collection system** > Digitalization tools

## 6. Evolution beyond 2030

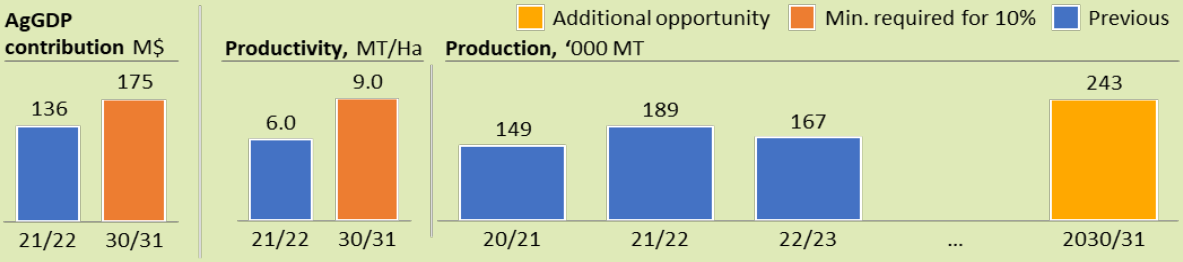
- **Structured market systems**
- **Increased variety-specific interventions**
- **New investments** in value addition
- **Improved varieties**, lab services
- **Larger export** markets
- **Increased commercialization**

# Commodity 1B: Fruits - Avocado

## 1. Context

- **Tanzania is the sixth largest avocado producer in Africa,** with ~124,000 households growing the commodity mainly in the southwest, northern regions. Exports grew by ~74% between 2020 and 2023, mainly to Europe and the Middle East, and now including India and China. Domestic demand is also growing, driven by urbanization and rising incomes. Many avocado farmers group into organizations and have certifications. The sector also has its own set of guidelines.
- **Challenges**: The avocado value chain has poor quality standard enforcement, a condition made worse by inadequate handling and logistics protocols (e.g., roadside inspections often mishandle transportation containers). The sub-sector is also over-reliant on varieties imported from abroad, as there are no original local varieties, and nurseries are unregulated and uncertified.

## 2. Targets




## 3. Interventions

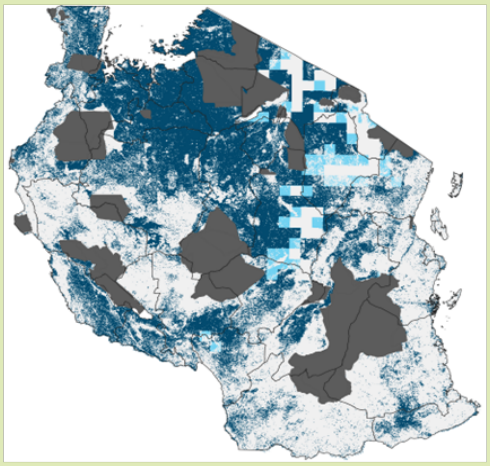
- **Boost production, utilization and adoption of improved local varieties** by smallholders to protect seedling supply, increase productivity, and resiliency to disease, pests and climate change *(Flagships 2, 6, 12)*
- **Develop, harmonize, and institute enforcement mechanisms of agronomic, storage, and processing standards and guidelines,** establish contract farming mechanisms to protect parties and encourage investments, develop structured market systems across the value chain *(Flagships 6, 12)*
- Increase **access to domestic and international markets** though organized linkages to markets, improving cold chain, removing trade barriers, creating market transparency, access to warehouse/storage facilities and processing capacity *(Flagships 9, 10, 11, 13, 15)*

## 4. Regional suitability

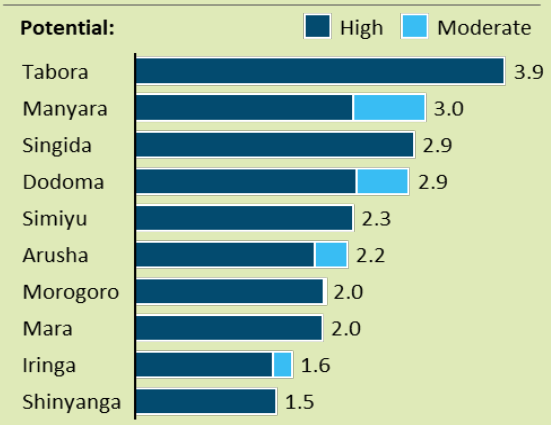
### Agronomic suitability of avocado in Tanzania

**Suitability under rain-fed conditions:**

Unsuitable | High | Moderate | Protected areas



### Suitable area in regions, (million ha)




**Avocado production has high suitability in large parts of Tanzania**, particularly in Tabora, Manyara and Singida (>2.8 million hectares)

## 5. Risks and mitigations

- **High water usage requirements** > use more efficient and targeted irrigation systems
- **Over-reliance on single country for 50% of exports** > Diversify export trading countries
- **Price volatility** of inputs > Conduct market intelligence and R&D

## 6. Evolution beyond 2030

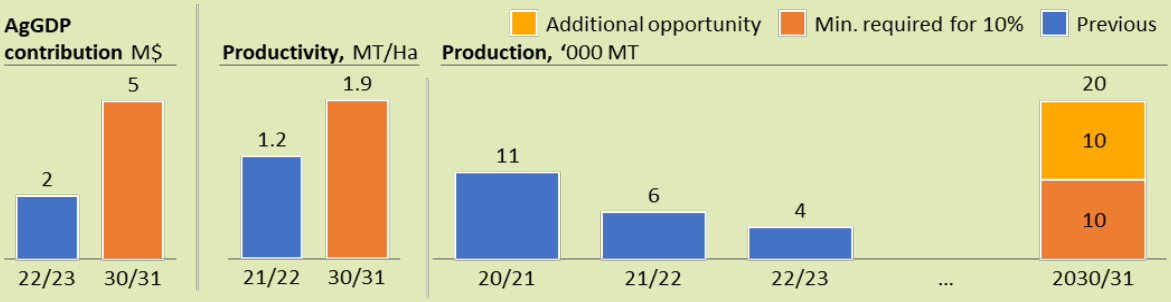
- **Scaling to broader value chains,** adapting to climate change
- **Structured market system** and more coordinated sector
- **Increased engagement of organized farmers**
- **Investments in branding**, commercial investment in production, processing
- **Focus on regulation**, infrastructure, market intelligence
- **Processing with focus on avocado oil**

# Commodity 2: Spices - Cloves

## 1. Context

- **Tanzania was historically a major producer and exporter of cloves**, with production primarily on the mainland at around 5,000 MT/year. Cloves have a high export potential on account of the facts that all parts of the plant are sellable and only five countries account for ~80% of global exports (including Tanzania). Tanzania's cloves are well noted for their aroma and flavor. Cloves take 3-5 years for the first harvest, which can influence farmers' willingness to invest. Additional opportunities for clove farmers include the use of clove trees to combat soil erosion and processing of clove leaves to produce aromatic oils.
- **Challenges**: The commodity is of poor quality due to poor harvesting and post-harvest practices leading to breaking of the clove heads, discoloration and mixing with waste. Long chain of middlemen traders impact the margins for both farmers and exporters. There is also a lack of access to planting materials; poor and uncoordinated enforcement of quality standards for inputs and produce.

## 2. Targets



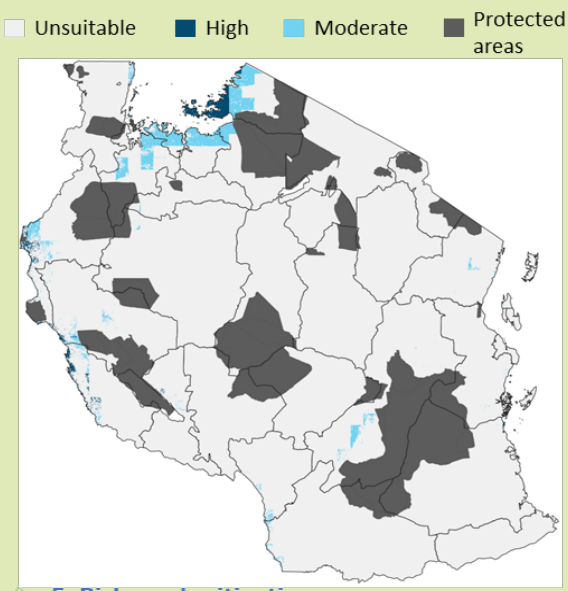

## 3. Interventions

- **Distribute of seedlings to increase production** in new areas of cultivation, in areas where soil degradation has been an issue and existing areas where intercropping or intensification of cultivation can be achieved *(Flagship 2)*
- **Promote the establishment of small-scale processing of clove leaves** to produce essential oils for domestic and export markets *(Flagship 9)*
- **Promote the use of clove trees to improve soil health, biodiversity** and **generate additional income** through carbon credits *(Flagship 3)*
- Improve productivity and quality of produce through **provision of quality extension services**, and **tailored input use** enabled by **digital farmer registration** and **farmer organization** *(Flagship 11, 12)*
- **Support the development of contract farming of cloves** in order to provide farmers with inputs, financing and guaranteed purchase to reduce their risk in cultivating cloves *(Flagship 6)*

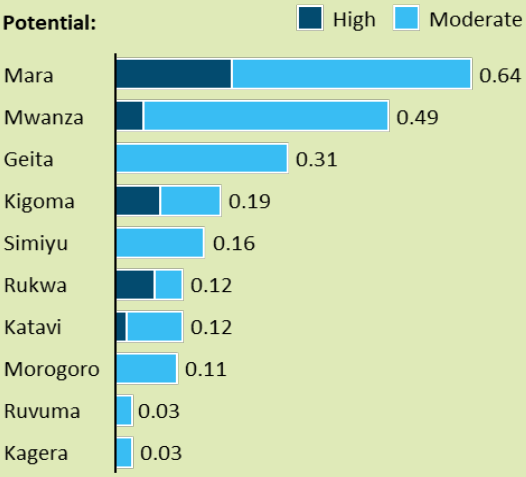
## 4. Regional suitability

### Agronomic suitability of cloves in Tanzania

**Suitability under rain-fed conditions:**




### Suitable area in regions, (million ha)




**Clove production has low suitability in Tanzania,** with the highest suitable area lying in Mara, Mwanza and Geita (>0.3 million hectares)

## 5. Risks and mitigations

- **Capacity of TARI & ASA to support initial production of seedlings** > Enable other private seedling producers
- **Slow adoption of value addition** > Ensure predictability in policies to support growth in production of essential oils

## 6. Evolution beyond 2030

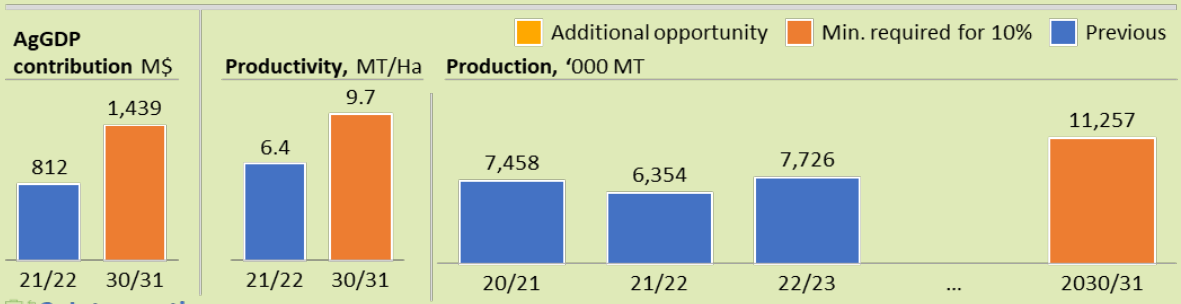
- **Growth of clove processors** to capture additional value from the commodity
- **Shift towards export** of not just cloves but also **essential oils to the global market**

# Commodity 3A: Vegetables – Cassava (root vegetable crop)

## 1. Context

- **Cassava is the third most important staple in Tanzania after maize and rice, supporting ~40% of rural farmers**. Almost 2 million households are involved in its production, a significant number of them women. While mostly used for human consumption (84%), there is potential to increate other uses, including raw material for textile, animal feed, bio-ethanol and many food and non-food industries. Cassava serves as a key export commodity for various regions in Tanzania, especially the lake zone, southern zone, central, east, and southern highlands.
- **Challenges**: Cassava in Tanzania suffers from challenges along the value chain. At production level, there is low productivity (7 MT/ha vs. potential of 20 MT/ha), combined with susceptibility to drought, pests and disease. There are losses both pre- and post-harvest (PHL of ~26% in 2020). The sub-sector also features low adherence to phytosanitary standards. In processing, access to regional markets is low due to low value addition, despite ethe untapped industrialization potential in the value chain.

## 2. Targets



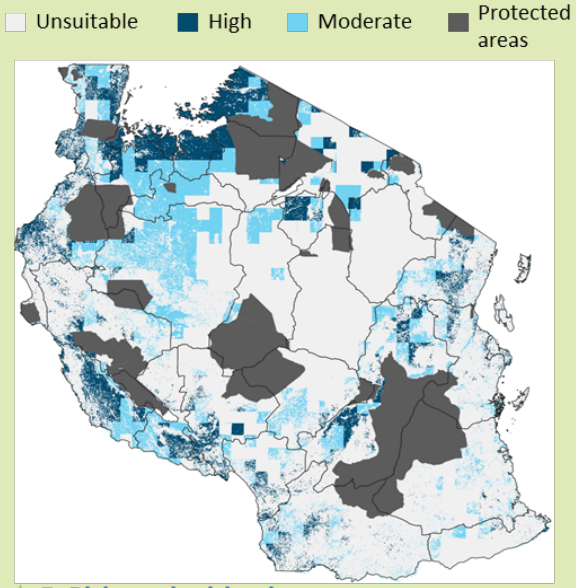

## 3. Interventions

- Boost production, utilization and adoption of **improved cassava seedlings** by smallholders to increase productivity, and resiliency to disease, pests and climate change *(Flagships 2, 7, 12)*
- Improve productivity through **provision of quality extension services**, and **tailored input use** enabled by **digital farmer registration** and **farmer organization** *(Flagships 4, 11, 12)*
- Increasing processing capabilities by **removing barriers and providing incentives** to produce ethanol, starch, low-cost and environmentally friendly animal feed, High Quality Cassava Flour(HQCF), etc. to boost industrialization drive and **expand regional exports dry chips** *(Flagships 4, 5, 7, 8, 9, 10)*
- **Policy review for cassava development** in the country e.g., new standards for incorporating HQCF, animal feed, youth cassava agripreneurs to replace the aging farmers, financing the cassava sector, etc. *(Flagship 10, 11, 12, 13, 14)*
- **Develop, harmonize, and institute enforcement mechanisms** of agronomic**, storage, and processing standards** and guidelines and **develop post-harvest infrastructure** to reduce post-harvest losses *(Flagship 6)*

## 4. Regional suitability

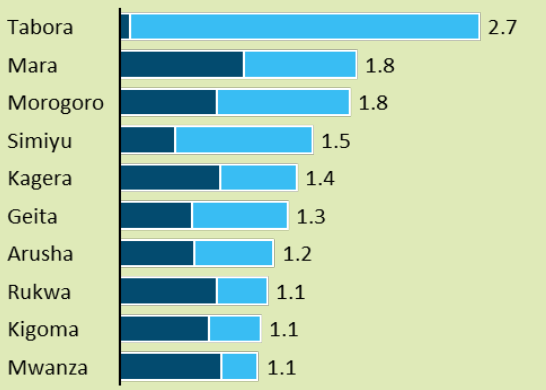
### Agronomic suitability of cassava in Tanzania

**Suitability under rain-fed conditions:**




### Suitable area in regions, (million ha)

**Potential:**




**Cassava production has high suitability in large parts of Tanzania**, particularly in Tabora, Mara and Morogoro (>1.7 million hectares)

## 5. Risks and mitigations

- **Gaps in seed quality** (incl. to climate, pests, diseases) replication capacity > requiring coordinated public-private effort on R&D and replication
- **Low farmer adoption** > a need to mobilize extension system
- **Insufficient processing capacity** and adoption of new processed products > policy for incentives for investment and consumption

## 6. Evolution beyond 2030

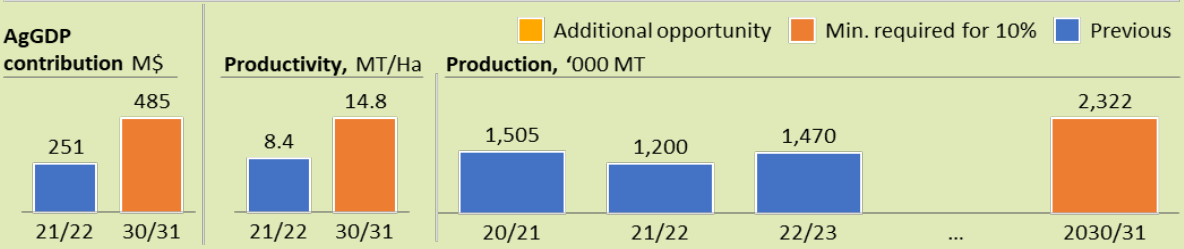
- **Properly regulated** and coordained sector with farmers producing high quality grade cassava, leveraging high quality fortified seedlings
- **Large number of players**, investors and processors using the full value of cassava to proper other industrial sectors

# Commodity 3B: Vegetables - Irish potato

## 1. Context

- **Irish potato is the second most traded vegetable in the domestic market and is considered an important staple.** Production has grown rapidly over the past few years (~12% CAGR in 2017-22). The increasing popularity of potato comes from growing urban and peri-urban populations who often consume it in quick meals such as chips *mayai* (85% of the market for potatoes is to make chips). Growth is also attributed to the introduction of improved varieties and farming techniques. While export is low (only 17% of vegetable exports in 2020/21), there is regional export potential, with potato demand in Africa having increased by 300% over the past two decades.
- **Challenges**: There is low productivity (~8 MT/ha or 3x less than best-in-East Africa) due to the lack of quality planting materials and machinery. Specifically, there is an opportunity to increase the availability of improved seeds through such facilities as seed banks. Farmers are also often unable to adapt to new varieties and are additionally disadvantaged when traders overpack the produce (offering farmers the same price for more weight). Moreover, once harvested, the commodity is transported over long distances in ill-equipped trucks leading to post-harvest losses. The sub-sector is missing data-capturing mechanisms that would allow a better view of its dynamics.

## 2. Targets




## 3. Interventions

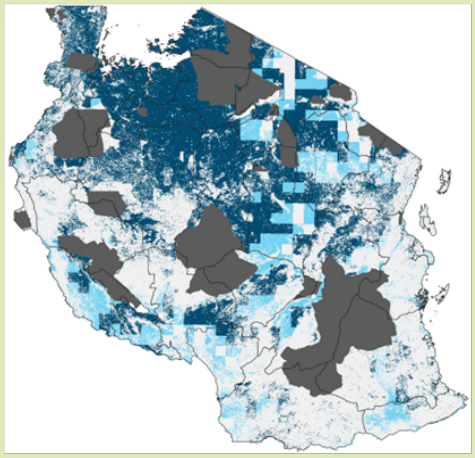
- Boost production, utilization and adoption of **improved Irish potato varieties** by smallholders to increase productivity, and resiliency to disease, pests and climate change which are best for producing chips *(Flagships 2, 7, 12)*
- Increase **access to domestic and regional markets** though organized linkages to markets, improving cold chain, removing trade barriers, creating market transparency and access to warehouse/storage facilities *(Flagships 9, 10, 11, 13, 15)*
- **Develop, harmonize, and institute enforcement mechanisms** of agronomic**, storage, and processing standards** and guidelines and **develop post-harvest infrastructure** to reduce post-harvest losses *(Flagship 6)*

## 4. Regional suitability

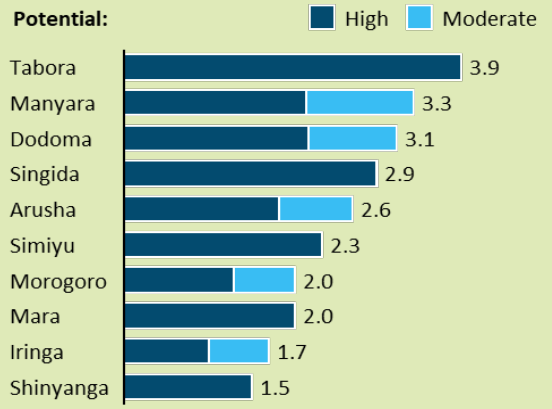
### Agronomic suitability of Irish potato in Tanzania

**Suitability under rain-fed conditions:**

Unsuitable | High | Moderate | Protected areas



### Suitable area in regions, (million ha)




**Irish potato production has high suitability in large parts of Tanzania,** particularly in **Tabora**, **Manyara** and **Dodoma** (>3.1 million hectares)

## 5. Risks and mitigations

- **Over-reliance on foreign-introduced varieties** (which can be unsuitable to the local market) > Deepen R&D efforts to develop improved local varieties
- **Metabolic health risks** from consumption of chips (e.g., high starch content, re-used oil, packaging material) > Set-up and enforce guidelines for chips production

## 6. Evolution beyond 2030

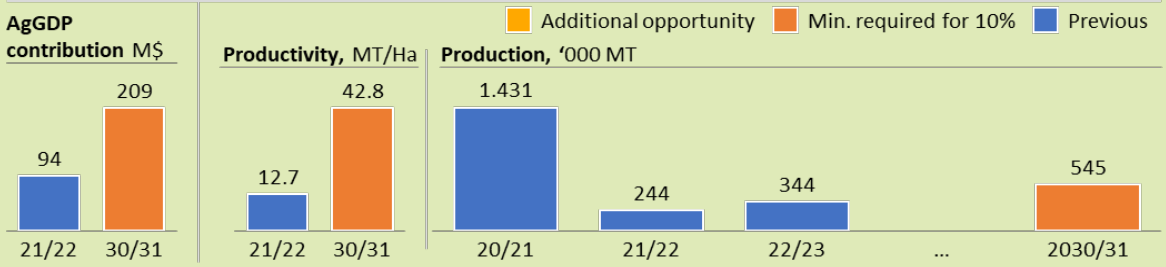
- **Better planting materials** (seeds)
- **Trade with international food franchises** (e.g., KFC, Pizza Hut)
- **Capture of regional markets** through better data
- **Export of seedlings to the Netherlands** with improved infrastructure
- **Growth of processors** using the right varieties
- **Improved food security** through table varieties

# Commodity 3C: Vegetables - Tomato

## 1. Context

- **Tomato is the most traded vegetable in the domestic market and is grown across the country, with production mostly by smallholders and trading by Dar es Salaam-based wholesalers.** 80% of production is taken up by the urban market, with the rest taken up by local markets (10%), export (5%) and processing (4%). In addition to its value as a staple, tomato is an important source of yearlong income for arming households. The sub-sector has seen recent interest from the local private sector (e.g., seed production) and development partners (e.g., conservation). While there is some export, it is limited due to poor transport infrastructure impacting quality. Moreover, large agri-businesses have exited the market due to a non-conducive business environment.
- **Challenges:** Tomatoes have inadequate transportation (e.g., they are often transported at night to provide cooler temperatures in the absence of cold chain technology, carried in wooden crates that leave them prone to damage), leading to post-harvest losses. The high susceptibility of the commodity to pests and disease results in over-spraying of pesticides, which in turn results in higher levels of health-impacting agro-chemical residue. Climate change is a major challenge, particularly in the form of increased flooding, which can destroy entire tomato farms often planted in rivers valleys on account of tomato's high water needs. Furthermore, market is unattractive to foreign investment due to a non-conducive business environment (e.g., VAT issues, logistics issues, fees).

## 2. Targets




## 3. Interventions

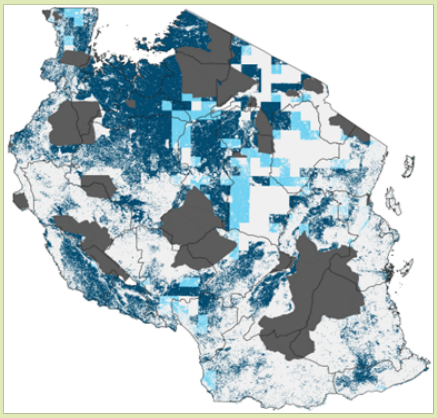
- **Invest in market intelligence in the domestic market** (e.g., providing farmers with production data by region, price to reduce volatility), **introduce a mechanism to conduct rapid tests** for agro-chemical residue levels (which can be a health burden) *(Flagship 11)*
- **Create incentives to attract local and international processors of tomato ketchup, paste, puree, etc.** (e.g., removing import duties on machinery, packaging, etc.) to add value and increase product shelf life for domestic and international markets *(Flagships 9)*
- **Develop, harmonize, and institute enforcement mechanisms** of agronomic, **storage, and processing standards** and guidelines and **develop post-harvest infrastructure** to reduce post-harvest losses *(Flagship 6)*

## 4. Regional suitability

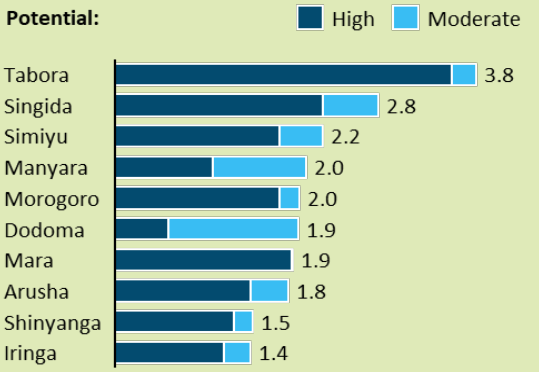
### Agronomic suitability of tomato in Tanzania

**Suitability under rain-fed conditions:**

Unsuitable | High | Moderate | Protected areas



### Suitable area in regions, (million ha)




**Tomato production has high suitability in large parts of Tanzania,** particularly in Tabora, Singida and Simiyu (>2.2 million hectares)

## 5. Risks and mitigations

- **Climate change risks (e.g., drought, pests/disease, water shortage) >** Introduce CSA practices, new seed varieties, improved infrastructure
- **Challenges with user adoption** of new varieties, practices > Capacity building through extension
- **Disconnect between demand and supply** > Develop market intelligence to inform decisions, PHL infrastructure
- **Price volatility in inputs (e.g., energy), currency fluctuation >** Increasing R&D into other sources of energy and inputs

## 76 Evolution beyond 2030

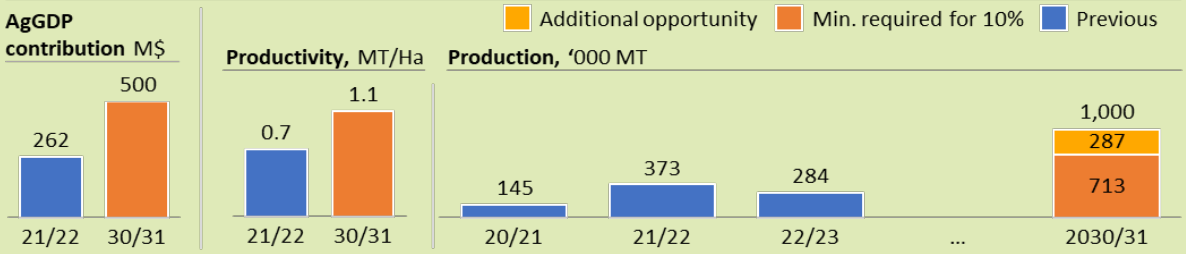
- **Structured market systems**
- **Increased variety-specific interventions**
- **New investments** in value addition
- **Improved varieties**, lab services
- **Larger export** markets
- **Increased commercialization**

# Commodity 4: Cotton

## 1. Context

- **Less than 3% of cotton produced in Africa comes from Tanzania**. At the same time, the country currently has ~1500 MT of processing capacity of which only 30% is used, indicating potential to grow processing. Overall production has greatly declined with current production only able to meet 30% (284k MT) of the available processing capacity of the ginneries (1,500 MT). Of the total production, only 20% further processed locally. Average productivity is poor (0.7 MT/Ha) compared to farmers adopting good agricultural practices in the same locality (1.7 MT/ha).
- **Challenges**: Very low productivity due to lack of capacity of TARI to produce enough early generation cotton seeds, poor pest management leading to loss of up to two-thirds of production and lack of proper soil health management. Additionally, market price fluctuations combined with high production costs because of poor productivity, leave little incentive for farmers to invest in the development of the corp.

## 2. Targets



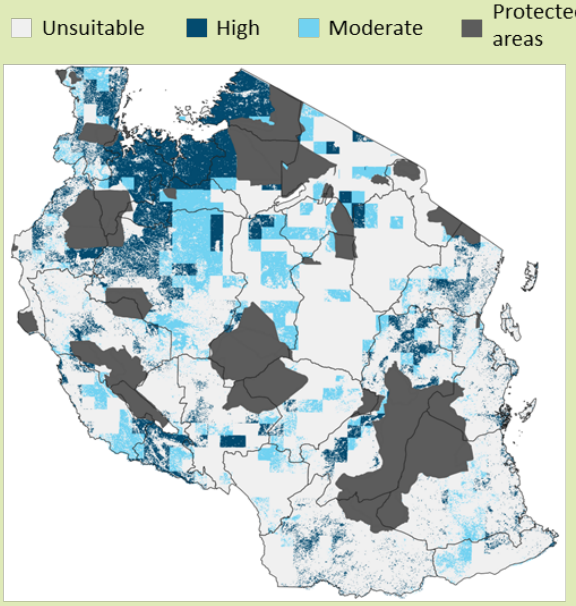

## 3. Interventions

- **Pilot use of drones for pesticide spraying of cotton, build business case,** prove effectiveness, financial viability, and facilitate transfer of operations to private players *(Flagship 7)*
- **Facilitate input support** via ginneries (for sprayers, pesticides, seeds, etc.), and **breeding, production and distribution of certified seeds** to increase productivity, resiliency to disease, pests and climate change *(Flagships 2, 7, 12)*
- Further boost productivity and quality of produce through **provision of quality extension services**, and **tailored input use** enabled by **digital farmer registration** and **farmer organization** *(Flagships 4, 11, 12)*

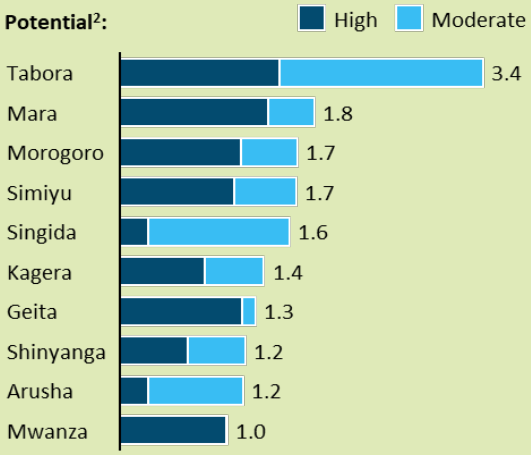
## 4. Regional suitability

### Agronomic suitability of cotton in Tanzania

**Suitability under rain-fed conditions:**




### Suitable area in regions, (million ha)




**Cotton production has high suitability in the north of Tanzania,** particularly in Tabora, Mara and Morogoro (>1.6 million hectares)

## 5. Risks and mitigations

- **Market fluctuations of cotton lint** > Move processing of cotton further into high value products for domestic and exportt markets
- **Continued productivity of cotton** > Look at investing further in high yielding varieties that are also resilient to currents pests and diseases

## 6. Evolution beyond 2030

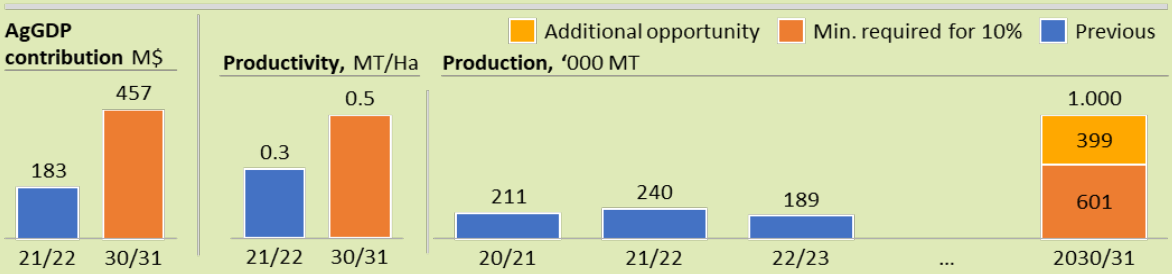
- **Cotton sub-sector able to grow** beyond current targets in order to satisfy all the processing capacity and beyond
- **Enhancement of processing** to create such products as textiles, cottonseed oil and meal, cotton hygiene products, etc.

# Commodity 5: Cashew nuts

## 1. Context

- **Tanzania is the second largest producer of cashew nuts in Africa,** accounting for ~11% of production on the continent. Cashew is a priority for the country given its growth in the African cashew market (4.5% CAGR expected in 2021-26) and its value addition potential. Smallholders constitute 80% of all cashew producers, the remainder being medium scale. Over 95% of cashew produced is exported, with less than 10% processed. The export value, however, has recently decreased (by 8% in 2020/21-22/23) due to declining market prices. The productivity of cashews (0.7 MT/ha) is 26% and 86% lower than that of neighbors Kenya and Malawi, respectively.
- **Challenge:** Most cashew trees are over 40 years old with poor management of top working and limited use of inputs. Current predominant varieties are vulnerable to pests and diseases. Almost all cashew apple is thrown away instead of being used for other products.

## 2. Targets




## 3. Interventions

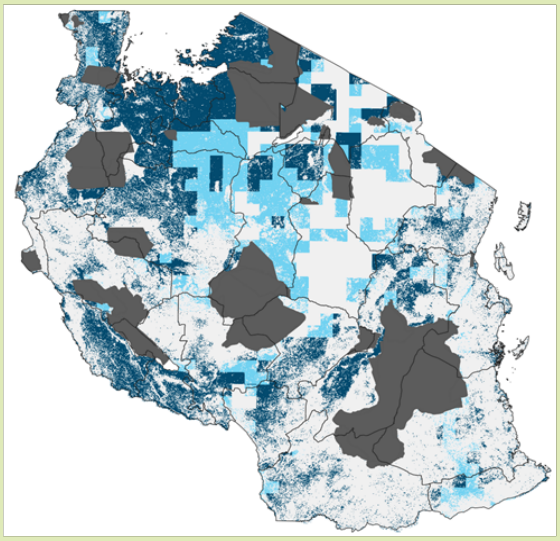
- Increase production of cashews by expanding land under cashew cultivation by unlocking **new suitable land parcels for cashew plantations** owned by smallholders to incentivise long-term investment in the commodity *(Flagship 14)*
- Boost production and distribution of **improved polyclonal seeds** for cashew to smallholders to increase productivity, and resiliency to disease, pests and climate change for existing and new plantations *(Flagships 2, 6, 12)*
- Improve productivity through **provision of quality extension services**, and **tailored input use** enabled by **digital farmer registration** and **farmer organization** *(Flagships 4, 11, 12)*
- **Facilitate increase in cashew nut processing and processing of its byproducts** such as cashew apple by exploring and promoting new business opportunities in cashew to private sector *(Flagship 6, 9)*

## 4. Regional suitability

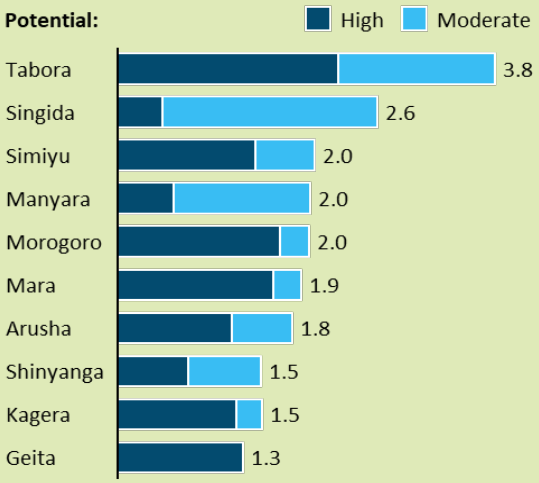
### Agronomic suitability of cashew nuts in Tanzania

**Suitability under rain-fed conditions:**

Unsuitable | High | Moderate | Protected areas



### Suitable area in regions, (million ha)




**Cashew has high suitability in large parts of Tanzania,** particularly in Tabora, Singida and Simiyu (>2 million hectares)

## 5. Risks and mitigations

- **Market fluctuations in raw cashew** > Export more processed cashew
- **Limited investment in processing** > Provide incentives for investment and engage with the private sector to understand and unlock barriers

## 6. Evolution beyond 2030

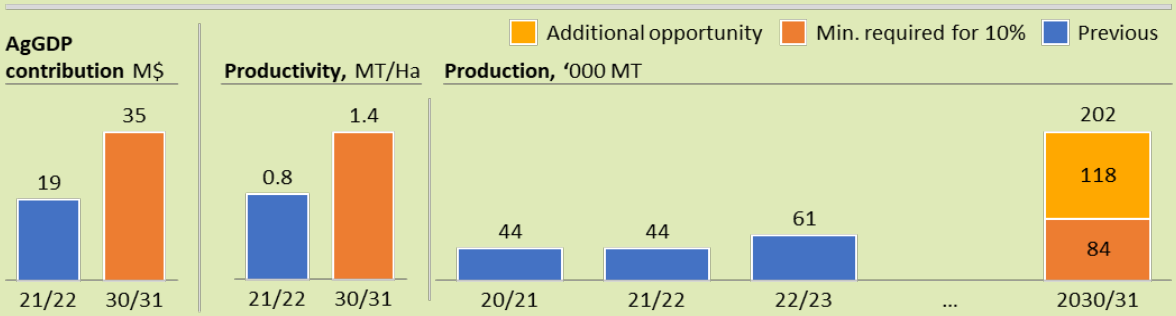
- **Ability to export more processed cashew**, moving away from raw cashew
- **A thriving SME ecosystem** to process and market cashew products
- **Additional value added products** (e.g., cashew nut oil, cashew shell cake, cashew husk mulch)

# Commodity 6: Sisal

## 1. Context

- **Tanzania is the largest producer of sisal in Africa**, and second in the world after Brazil. With growing global demand for sustainable products, Tanzania has the potential to capture market growth. Current production is about 50,000 MT of sisal fibre, of which over 70% is exported in fiber form and only 30% is further processed into higher value products such as sisal sacs, indicating that Tanzania is not effectively capturing the value addition potential.
- **Challenges**: The sisal industry currently operates at a primary processing capacity of 50,000 MT/year, despite having a potential harvest of up to 80,000 MT/year. There is a need to increase production and productivity to meet trends in global market growth and sustainability. Moreover, there is a need to increase primary processing to meet harvest potential and further value addition. Only 2% of the entire sisal plant is being used, the rest is discarded. Several large sisal plantations were abandoned a few years ago and need to be revived.

## 2. Targets




## 3. Interventions

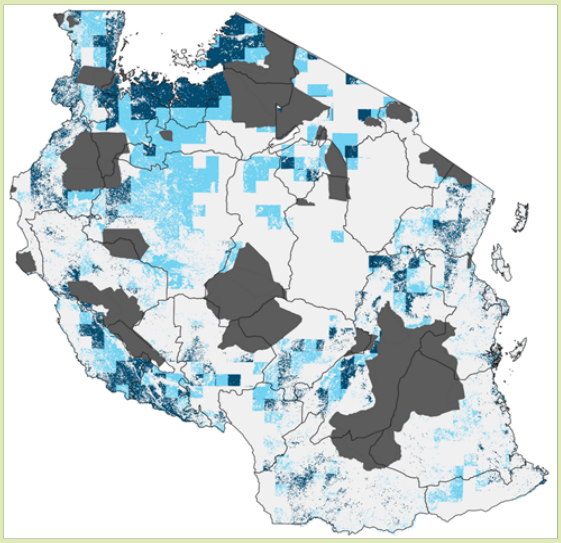
- Incentivise increased production, though the **production and distribution of sisal seedlings** to smallholders which are productive, resilient to disease, pests and climate change *(Flagships 2, 6, 12)*
- Boost production of sisal by 3.3x between 2022/23 and 2030/21 by expanding land under sisal cultivation by reviving abandoned estates and unlocking **new suitable land parcels** owned by smallholders to incentivise long-term investment in the commodity *(Flagship 14)*
- **Facilitate increase in primary and secondary processing, local utilization of sisal fiber and it's byproducts** by exploring and promoting new business opportunities in sisal to private sector *(Flagship 9)*

## 4. Regional suitability

### Agronomic suitability of sisal in Tanzania

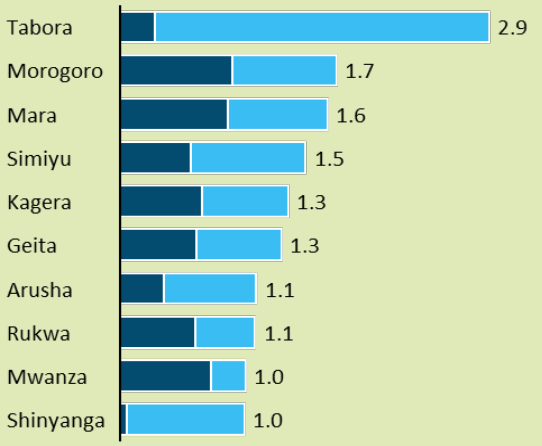
**Suitability under rain-fed conditions:**

Unsuitable | High | Moderate | Protected areas



### Suitable area in regions, (million ha)

**Potential:** High | Moderate




**Sisal has high suitability in the northern regions of Tanzania,** particularly in Tabora, Morogoro and Mara (>1.6 million hectares)

## 5. Risks and mitigations

- **Market fluctuations in raw sisal** > Export more processed sisal
- **Inability to increase primary processing to match production growth** > Invest in promotion of the private sector and collaborate with them to ensure a conducive business environment and incentives specific to sisal

## 6. Evolution beyond 2030

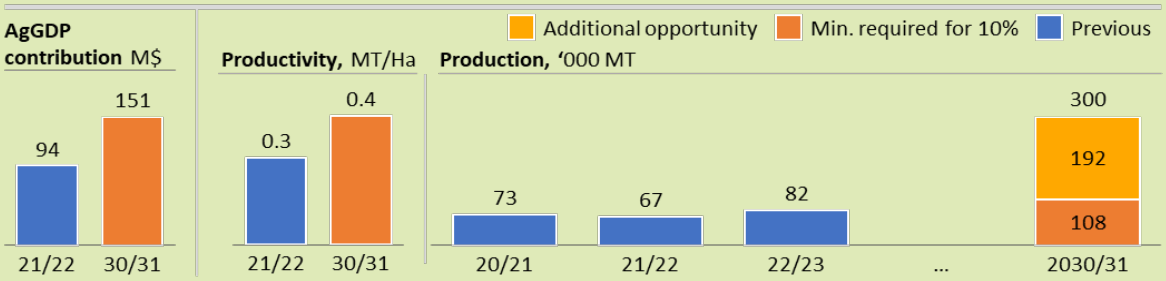
- **Growth of secondary processing** of sisal to make other products for domestic and export markets (e.g., sisal rope, twine, yarn, cordage, paper, composites, fiberboardd, etc.)
- **Growth of processing or utilization of by-products** in order to produce additional products such as alcohol and sugars

# Commodity 7: Coffee

## 1. Context

- **Tanzania is the 4th largest producer of coffee in Africa** with 60% Robusta and 40% premium Arabica. Tanzania has the potential to benefit from the large and growing global coffee market, valued at 127 billion USD in 2022 and expected to grow at >4.7% to 2030 (compounded annually). However, Tanzania's own production recently shrank (e.g., in Kilimanjaro) due to aging plantations, urbanization, poor aggregation and grading practices, which reduced productivity and profit margins, hence lowering the incentives of farmers to invest in its development. While coffee is globally mostly sold based on aroma with over 17 grades, it is sold as a commodity in Tanzania.
- **Challenges**: Productivity of coffee is 70% lower than neighbors such as Uganda. International market considers Tanzanian coffee to be of lower quality due to mixing of grades at points of production and aggregation. Most Agriculture Marketing Co-operative Societies (AMCOS) focus on boosting production and not grading.

## 2. Targets



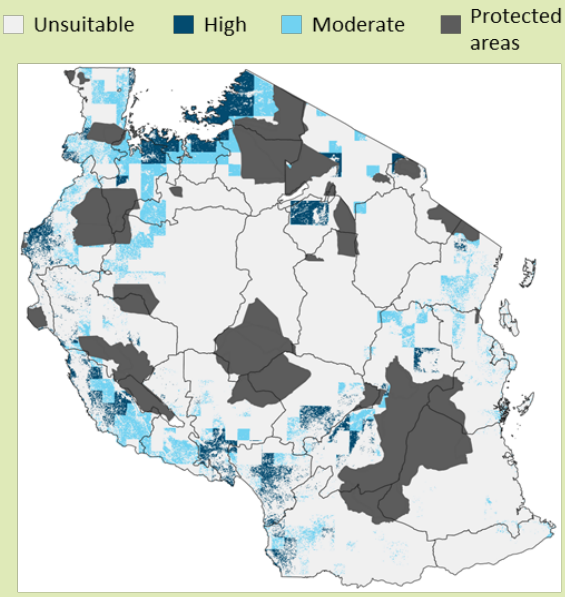

## 3. Interventions

- Improve productivity (by 1.4x between 2021/22 and 2030/31) through **provision of quality extension services**, and **tailored input use** enabled by **digital farmer registration, access to finance** and **farmer organization** *(Flagships 4, 11, 12, 13)*
- Incentivise increased production, though the **production and distribution of seedlings** to smallholders which are productive, resilient to disease, pests and climate change and unlocking new coffee estates *(Flagships 2, 6, 14)*
- **Improve coffee quality and value addition** by enforcing better grading practices, promoting use of **central pulping units** and establishment of **coffee certification institutions** *(Flagship 6)*

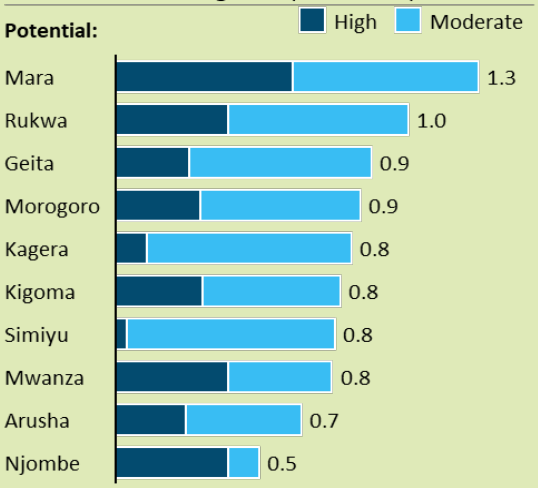
## 4. Regional suitability

### Agronomic suitability of coffee in Tanzania

**Suitability under rain-fed conditions:**




### Suitable area in regions, (million ha)




**Coffee has high suitability in small parts of Tanzania,** with the highest suitability lying in Mara, Rukwa and Geita (>0.9 million hectares)

## 5. Risks and mitigations

- **Price volatility in the global coffee market** > Diversify coffee products to include specialty and value-added coffee varieties, targeting niche markets
- **Threat of coffee plant diseases and pests** > Implement integrated pest management practices

## 6. Evolution beyond 2030

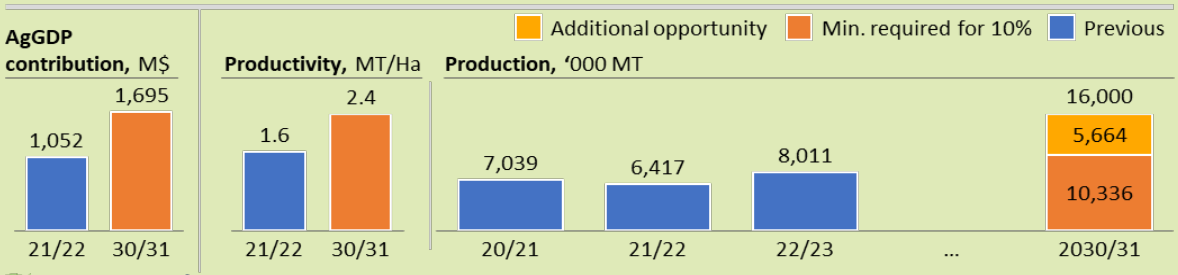
- **High level of value addition** in the country in order to sell roasted coffee as opposed to raw
- **Ability to capture premium global markets** due to the high level of product grading (moving away from the mixed coffee) and the promotion of regional branding (moving away from selling coffee only as a commodity)

# Commodity 8: Maize

## 1. Context

- **Maize is one of Tanzania's largest commodities;** it constitutes 40% of caloric intake, is grown on an estimated 4 million ha of land and consumes 50% of all fertilizer used in the country. Maize is also a major crop on the continent, with the market estimated at 41.4 billion USD and expected to reach 57.3 bn USD by 2029 (6.7% CAGR). It is also considered the staple food for most of Sub-Saharan Africa. Moreover, maize is an important smallholder commodity, as 85% of all Tanzanian maize is produced by smallholders across the entire country, mostly for subsistence. ~3 million farming households are engaged in maize production (out of a total of ~5 million engaged in crops overall) and the commodity takes up >8% of agricultural GDP.
- **Challenges**: Maize in Tanzania is of low yield and quality due to the limited adoption of best practices and lack of quality inputs. There are many local varieties of the commodity, and this can be a challenge for quality control. Additionally, quality and food safety standards are poorly implemented. Farmers themselves are often not organized into groups, limiting their access to inputs, finance and the market. Climate change heavily impact maize, exposing it to drought and unpredictable weather.

## 2. Targets




## 3. Interventions

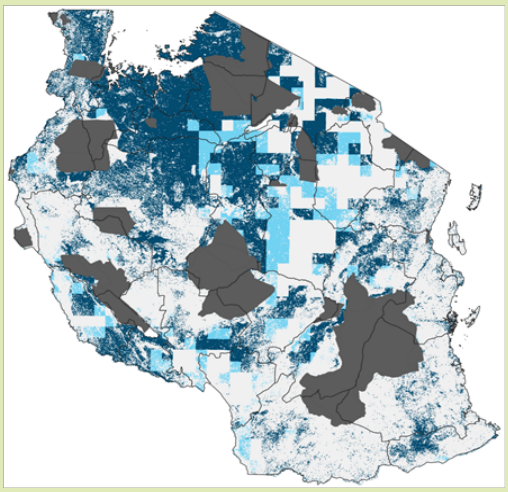
- Develop, harmonize, and institute enforcement mechanisms of **agronomic, storage and processing standards and guidelines**, establish **contract farming mechanisms** to protect parties and encourage investments, develop **structured market systems** across the value chain *(Flagships 4, 6, 13)*
- Improve productivity through **provision of quality extension services**, and **tailored input use** enabled by **digital farmer registration** and **farmer organization** *(Flagships 4, 11, 12)*
- Boost production, utilization and adoption of **market-led priority seed varieties** by smallholders to increase productivity, and resiliency to disease, pests and climate change *(Flagships 2, 6, 12)*
- Increase resilience and food security through **adoption of climate smart practices** (e.g., soil health), **use of irrigation** to enable multi-cycle cultivation, and **expansion of food reserves** *(Flagships 1, 3, 15)*

## 4. Regional suitability

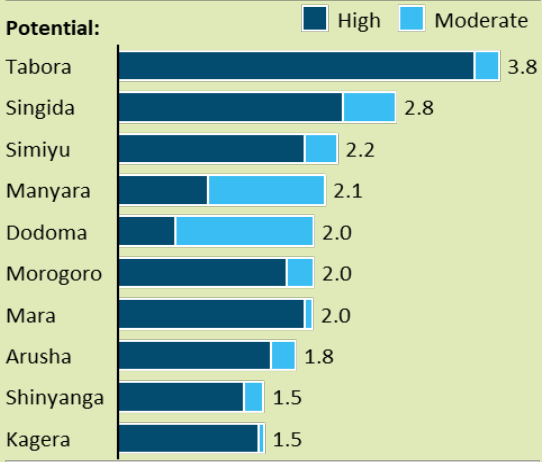
### Agronomic suitability of maize in Tanzania

**Suitability under rain-fed conditions:**

Unsuitable | High | Moderate | Protected areas



### Suitable area in regions, (million ha)




**Maize production has high suitability** in northern and central parts of Tanzania, particularly in **Tabora**, **Singida** and **Simiyu** (>2.2 million hectares)

## 5. Risks and mitigations

- **Lack of coordination and political will to execute interventions** > ATO governance and coordination
- **Resource/budget constraints** (incl. skilled professionals) > IFPRI model to support recalibration as required
- **Limited adoption** by farmers > Utilizing the extension and local government systems to drive adoption

## 6. Evolution beyond 2030

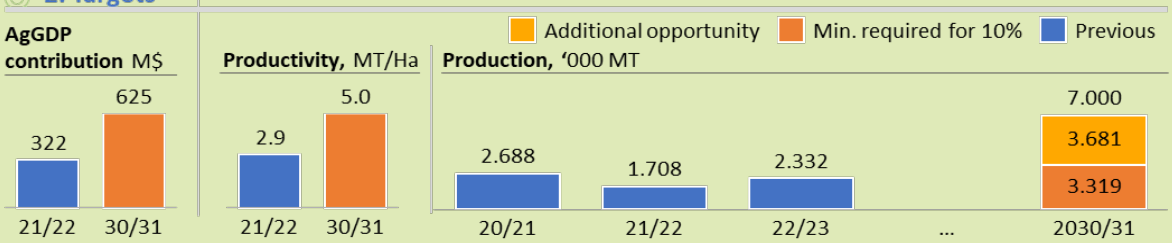
- **Enhancement of innovation** in agri-extension services (e.g., bundled services) to increase adoption of GAP
- **Production of few market-led varieties** that allow farmers to fetch premium export markets
- **Structured market systems** to increase price transparency and help farmers receive higher prices

# Commodity 9: Paddy

## 1. Context

- **Paddy is an important staple commodity in Tanzania**, responsible for 4% of total AgGDP and 20% off cereals AgGDP in 2022, grown by 1.3 million households, harvested on 1.5 million ha and taking up 90% of all irrigated land. In Sub-Saharan Africa, rice consumption is to grow by 6% a year, but most African countries are not self-sufficient producers, indicating an opportunity for Tanzania to export paddy. In Tanzania itself, paddy is the fastest growing cereal in terms of consumption, (growing 12% annually) and features a high level of farmer organization (given the requirements of irrigation farming). There are ongoing efforts to improve the subsector (e.g., improvements in land, water, irrigation, infrastructure) and opportunities stemming from urbanization and demand for high-value rice.
- **Challenges**: Paddy in Tanzania faces disadvantages in certain parts of the value chain. At the production level, cultivation is often highly dependent on rain and lacks quality inputs (mainly improved seeds and fertilizer, machinery). The commodity suffers from poor quality on account of inadequate storage infrastructure. In processing and marketing, there is an opportunity to improve value addition and regional branding. an opportunity to boost regional branding.

## 2. Targets




## 3. Interventions

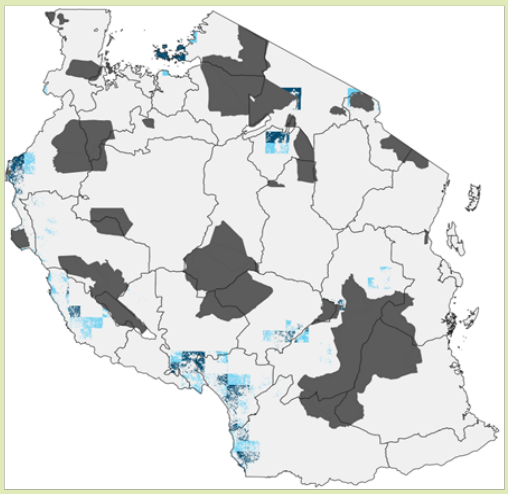
- Promote **adherence to good agricultural practices (GAP)** and commodity grading standards through extension services to enable farmers to capture premium markets for their produce *(Flagships 4, 11, 12)*
- Increase **access to premium domestic and international markets** through organized linkages to markets, removing trade barriers, creating market transparency, improving warehouse/storage facilities, increasing milling capacity and promotion of regional brands *(Flagships 9, 10, 11, 13, 15)*
- Increase sustainability and resilience through **adoption of climate smart practices** (e.g., soil health management), **use of irrigation** to enable multi-cycle cultivation, and **usage of varieties with lower environmental impact***(Flagships 1, 2 3)*

## 4. Regional suitability

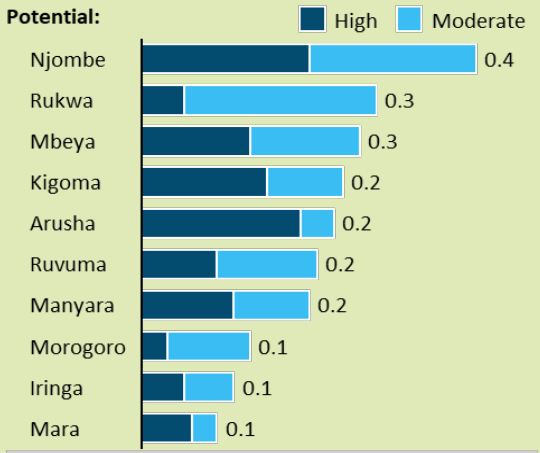
### Agronomic suitability of paddy in Tanzania

**Suitability under rain-fed conditions:**

Unsuitable | High | Moderate | Protected areas



### Suitable area in regions, (million ha)




**Rice production has small, concentrated areas of suitability** in Tanzania, with the suitable areas lying in Njombe, Rukwa and Mbeya (>0.2 million hectares). This would however increase when accounting for irrigation

## 5. Risks and mitigations

- **Climate change risks** > Introduce climate-smart agriculture, early warning systems
- **Continued lack of enforcement** of agronomic best practices > Increased capacity building through extension
- **Increased external/imported competition** > Use regional blocs for bilateral agreements, investment promotion
- **Changes in consumer behavior** > Deploy change management campaigns and monitoring systems

## 6. Evolution beyond 2030

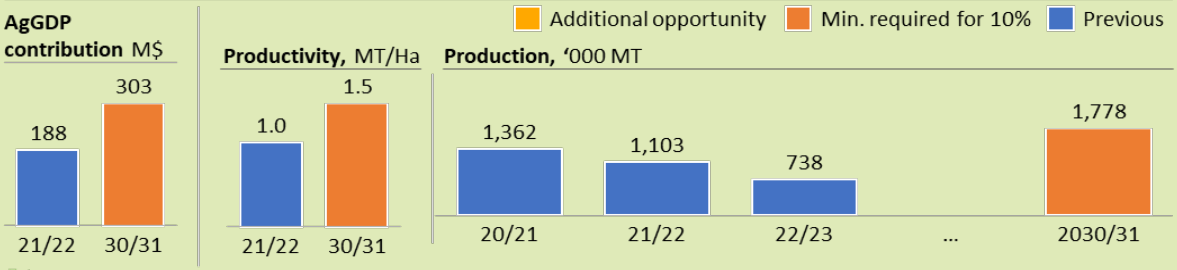
- **Increased commercial-led production**
- **Enhanced branding** of Tanzanian rice
- **Increase in investment** (across the value chain), leading to new technologies for seeds,, post-harvest
- **Structured market systems**
- **Coordinated efforts** supported through digitalization to create

# Commodity 10: Sorghum

## 1. Context

- **Sorghum is the third most-grown cereal in Tanzania after maize and rice,** grown mostly in semi-arid regions and used primarily in food, animal feed, alcohol and biofuels. Sorghum is grown primarily by smallholders using local seed varieties, and 90.4% of it is used for consumption while the rest is used for commercialization at the national level. While production has decreased by 46% between 2020/21 and 2022/23 (with drought considered the limiting factor by farmers), there is increasing demand for sorghum given its health benefits and use in breweries.
- **Challenges:** While widely grown, Tanzanian sorghum is low quality grain in relation to imported and global varieties. This can be partly attributed to low levels of soil fertility and poor agronomic management, as well as limited extension, poor marketing and infrastructure. These and other factors also lead to high post-harvest losses. There is a lack of improved seed varieties, and the distribution of inputs generally can be improved upon. Continued use of traditional agricultural practices also hamper the sub-sector.

## 2. Targets




## 3. Interventions

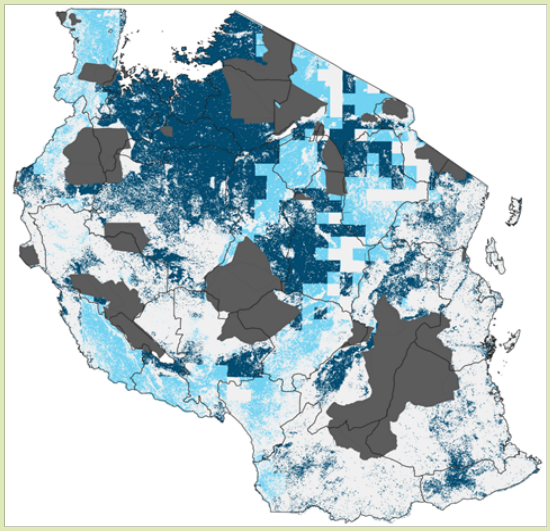
- **Boost production, utilization and adoption of improved seed varieties** by smallholders to increase productivity, and resiliency to disease, pests and climate change *(Flagships 2, 6, 12)*
- **Develop, harmonize, and institute enforcement mechanisms of agronomic, storage, and processing standards** and guidelines and **develop post-harvest infrastructure** to reduce post-harvest losses, establish **contract farming mechanisms** to protect parties and encourage investments, **develop structured market systems** across the value chain *(Flagships 6, 7, 12)*
- **Improve productivity through provision of quality extension services**, and tailored input use enabled by digital farmer registration and farmer organization *(Flagships 6, 11, 12)*

## 4. Regional suitability

### Agronomic suitability of sorghum in Tanzania

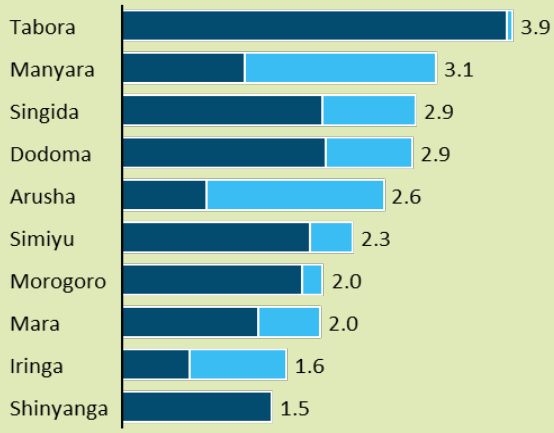
**Suitability under rain-fed conditions:**

Unsuitable | High | Moderate | Protected areas



### Suitable area in regions, (million ha)

**Potential:** High | Moderate




**Sorghum production has high suitability in large parts of Tanzania**, particularly in Tabora, Manyara and Singida (>2.8 million hectares)

## 5. Risks and mitigations

- **Coordination, political will** for execution > ATO governance coordination
- **Climate change risks** > Introduce climate-smart agriculture, early warning systems
- **Resource/budget constraints** (incl. skilled professionals) > IFPRI model to support recalibration as required
- **Change in consumer preferences** > Deploy change management campaigns and monitoring systems

## 6. Evolution beyond 2030

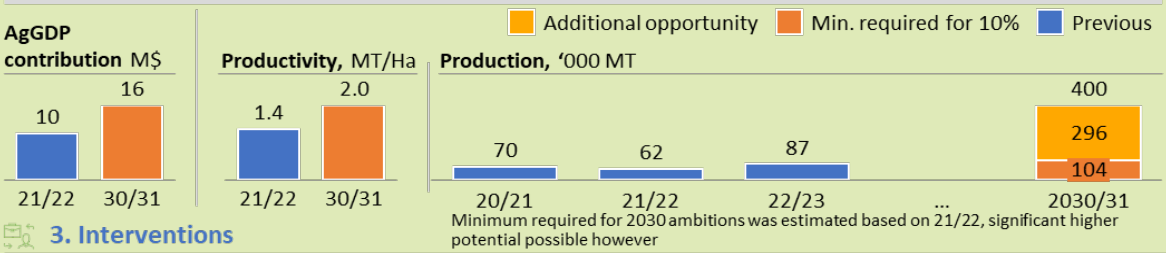
- **Increased level of exports**
- **Structured market**
- **Better organized producers**

# Commodity 11: Wheat

## 1. Context

- **Wheat is one of Tanzania's most imported commodities with 1.3 million MT imported in 2021/22 representing 96% of total demand.** Wheat is a critical commodity given its importance for national food systems self-reliance and import substitution. Domestic production includes the participation of a wide variety of producers, from smallholder to large commercial players, with most acquiring their seeds through the Agricultural Seed Agency. The small amount produced locally (only 87,000 MT in 2022/23) suffers from low productivity. The supply chain is dominated by traders and importers.
- **Challenges:** The wheat sub-sector suffers from lack of improved seed varieties (specifically those with the right gluten content) and high production costs. Climate change effects, such as drought and heavy rainfall further reduces productivity. The lack of infrastructure, particularly adequate rural storage, negatively effects quality. Being one of the most imported commodities, the value chain faces stiff competition from imports.

## 2. Targets




Minimum required for 2030 ambitions was estimated based on 21/22, significant higher potential possible however

## 3. Interventions

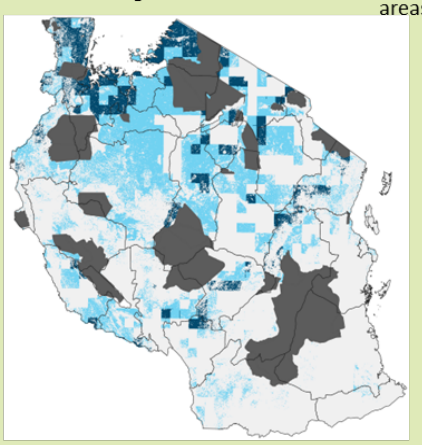
- **Increase domestic wheat production capacity** by identifying and allocating land available for commercial wheat production and guidelines for GAP to ensure wheat production meet specification requirements for the processing sectors *(Flagships 3, 8, 13, 14)*
- **Conduct market-led identification of preferred wheat seed varieties**, coordinate with TOSCI to facilitate certification, importation of seed volume necessary for commercial farming, and **boost production, utilization and adoption of improved seed varieties** *(Flagships 2, 6, 8, 12)*
- **Provide policy advisory** to catalyze local production though policy reviews, tax incentives removal of barriers for commercial production and processing *(Flagships 6, 7, 8, 9)*
- **Support the setting up and initial operations** of domestic producers to drive scale and lower cost of operations, for a pre-determined time window – exact policy vehicle to be determined e.g., derisking financing mechanisms, import quotas, targeted subsidies, etc. *(Flagship 4, 8, 13)*
- Increase resilience and food security through **adoption of climate smart practices** (e.g., soil health), **use of irrigation** to enable multi-cycle cultivation, and **expansion of food reserves** *(Flagships 1, 3, 15)*

## 4. Regional suitability

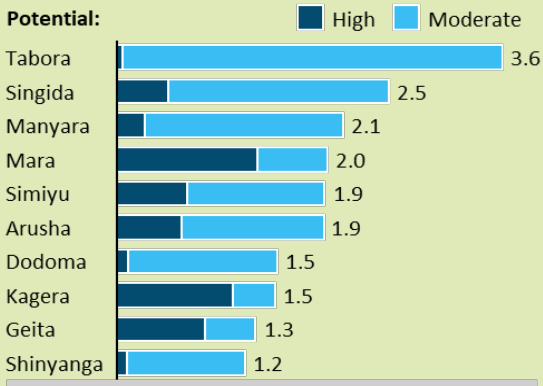
### Agronomic suitability of wheat in Tanzania

**Suitability under rain-fed conditions:**

Unsuitable | High | Moderate | Protected areas



### Suitable area in regions, (million ha)




**Wheat has high suitability in northern areas of Tanzania**, particularly in Morogoro, Mbeya and Rukwa (>0.7 million hectares)

## 5. Risks and mitigations

- **Climate variability** affecting production > Introduce CSA practices, new seed varieties, improved infrastructure
- **Fiscal policy challenges** that can hamper the sector (e.g., import duties) > Development of crop-specific strategies, market intelligence-advised policy advisory
- **Competition** with imported produce > Policies to support competitiveness of domestic production
- **New varieties** for which practices are not known > Capacity building through extension, the use of cluster-based production
- **Price volatility** of inputs > Conduct markett intelligence and R&D

## 6. Evolution beyond 2030

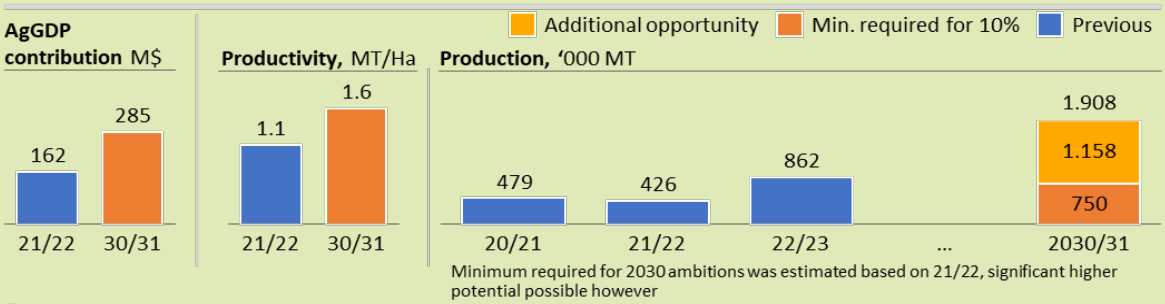
- **Scaling up to broader value chains** and adapting to climate changes to maintain sustainability, profitability
- **Increased import substitution**
- **Increased engagement of organized farmers**
- **Increased commercial investment,** including in production, supply chain, infrastructure
- **Standalone well-coordinated wheat strategy and implementation plan**

# Commodity 12: Sunflower

## 1. Context

- **Sunflower is major oilseed in Tanzania** grown by >661,000 farming households, planted on an area of 529,000 ha and harvested on ~482,000 ha. The key production of sunflower, sunflower oil, is expected to grow by 6% CAGR in 2020-25, indicating potential for Tanzania to process and export. A vast majority of sunflower is produced by smallholders; the plant is grown also partly to provide animal feed. The warehouse receipt system is used where there are cooperatives; farmers outside of cooperatives sell to middle-men
- **Challenges**: The main challenge of the sunflower subsector is the limited access to improved and affordable seeds and other inputs. Additionally, there is a lack of standardized agronomic guidelines for production and post-harvest management, which can impact the quality of the produce. Processing capacity (to produce oil) is limited in terms of both knowledge and technology in the country. Additionally, there are usually high taxes and feed on value addition actors. While there is some branding and promotion, it is uncoordinated. The value chain continues to face competition from imported cooking oils.

## 2. Targets




Minimum required for 2030 ambitions was estimated based on 21/22, significant higher potential possible however

## 3. Interventions

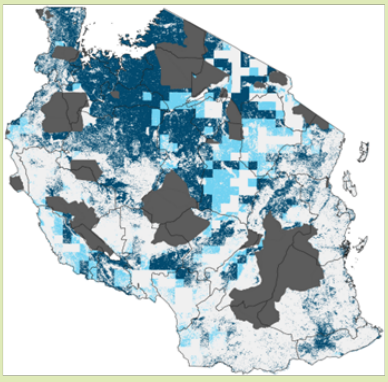
- **Develop, harmonize, and institute regulatory mechanisms** of agronomic, storage, and processing standards and guidelines, **establish contract farming mechanisms** to protect players and encourage investments *(Flagships 6, 12)*
- **Institute data driven decision making structures** and regulatory frameworks to unlock Investments *(Flagship 11)*
- **Promote import substitution** through setting incentives for supply chain actors, setting aside demarcated land and promoting commercialization and block farming *(Flagships 8. 14)*
- **Increase R&D into new varieties** and increase capacity of ASA and TARI *(Flagship 2)*

## 4. Regional suitability

### Agronomic suitability of sunflower in Tanzania

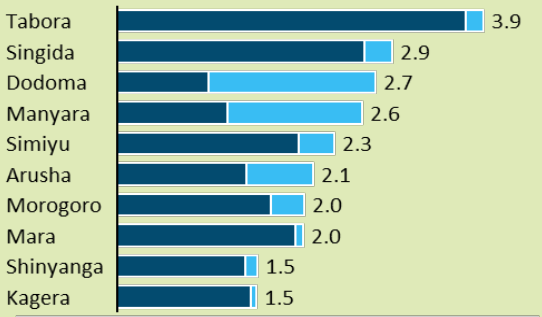
**Suitability under rain-fed conditions:**

Unsuitable | High | Moderate | Protected areas



### Suitable area in regions, (million ha)

**Potential:** High | Moderate




**Sunflower production has high suitability in large parts of Tanzania,** particularly in Tabora, Singida and Dodoma (>2.7 million hectares)

## 5. Risks and mitigations

- **Climate variability** affecting production > Introduce CSA practices, new seed varieties, improved infrastructure
- **Fiscal policy challenges** (e.g., import duties) > Development of crop-specific strategies, market intelligence-advised policy advisory
- **Competition** with imported produce > Make use of regional blocs for bilateral agreements, investment promotion (e.g., PPPs and incentives for importers to do production in-country)
- **New varieties** for which practices are not known > Capacity building through extension, the use of cluster-based production
- **Price volatility** of inputs > Conduct markett intelligence and R&D to identify more stable input sources

## 7. Evolution beyond 2030

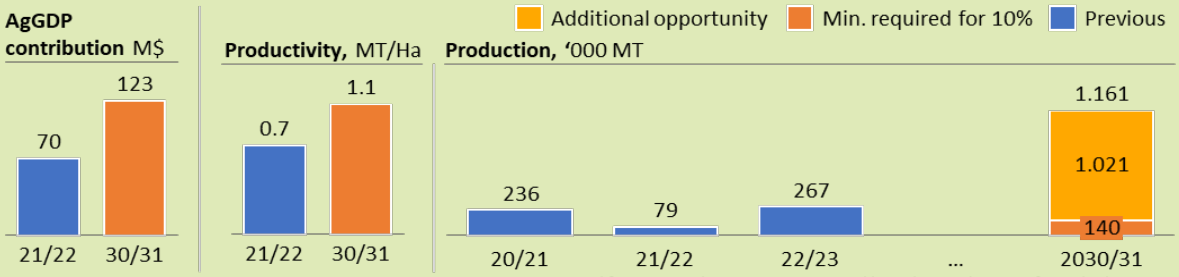
- **Scaling up to broader value chains** and adapting to climate changes to maintain sustainability, profitability
- **Increased import substitution**
- **Increased engagement of organized farmers**
- **Increased commercial investment,** including in production, supply chain, infrastructure
- **Standalone well-coordinated wheat strategy and implementation plan**

# Commodity 13: Sesame

## 1. Context

- **Tanzania is one of the world's largest producers and exporters** (exporting mainly to China (82% of exports in 2021) and Japan (14%)). Sesame is a greatly in-demand commodity globally, with the biggest importer, China, increasing its imports of the commodity by 189% in 2010-2021.The sesame value chain is more structured than other commodities due to greater involvement of TMX, TCDC (e.g., use of warehouse receipting system). The production value of the commodity has been growing every year for the past 3 to 4 years as increasing demand leads to increasing prices.
- **Challenges:** Produce quality can be low due to the mixing of varieties. Productivity is also low (~1.8x lower than best-in-Africa) as there is a lack of improved seeds and proper farm management. Moreover, on account of the high labor intensity of sesame, the commodity is prone to high pre-harvest losses. As with other commodities, climate change effects such as drought and heavy rain negatively impact sesame, further worsening production and quality.

## 2. Targets




Minimum required for 2030 ambitions was estimated based on 21/22, significant higher potential possible however

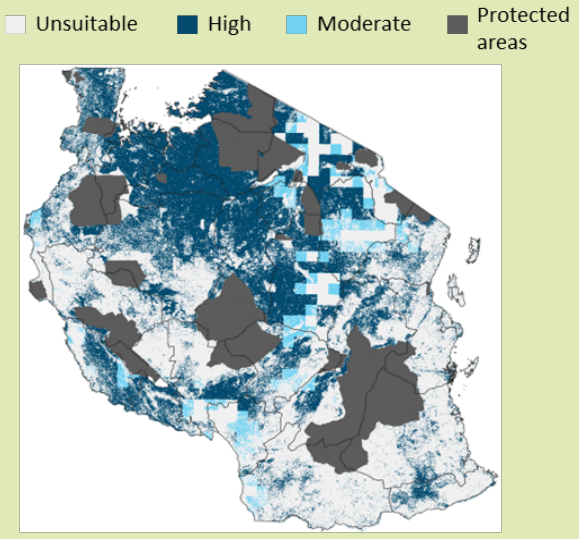
## 3. Interventions

- **Improve productivity and quality** through provision of quality extension services, and tailored input use enabled by digital farmer registration and farmer organization to build farmer capacity in soil, water and integrated pest management *(Flagships 3, 4, 6, 11, 12)*
- **Promote the use of PPPs** across the value chain (incl. machinery, processing), **promote large-scale commercial farming** (e.g., through bilateral agreements) **Improve branding** *(Flagships 10)*
- **Institute data driven decision making structures** and regulatory frameworks to unlock Investments *(Flagship 11)*

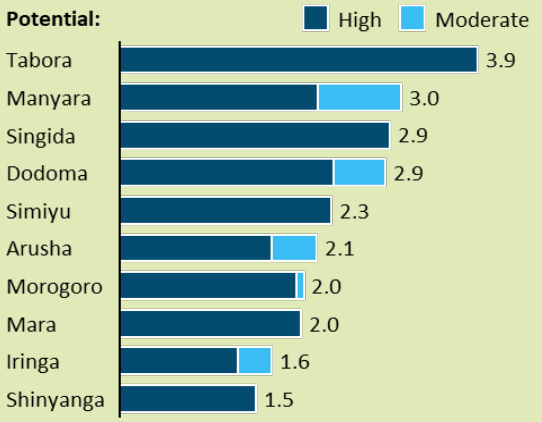
## 4. Regional suitability

### Agronomic suitability of sesame in Tanzania

**Suitability under rain-fed conditions:**




### Suitable area in regions, (million ha)




**Sesame has high suitability in large parts of Tanzania,** particularly in Tabora, Manyara and Singida (>2.8 million hectares)

## 5. Risks and mitigations

- **Climate change risks (e.g., drought, pests/disease, water shortage) >** Introduce CSA practices, new seed varieties, improved infrastructure
- **Market saturation,** lack of market access > Expand to new markets through bilateral agreements; improve branding, certification
- **Price fluctuations >** Price volatility in inputs (e.g., energy), currency fluctuation > Increasing R&D into other sources of energy and inputs
- **Delay in adopting quality standards >** Promote GAP and develop enforcement and certification mechanisms
- **Over-reliance on single markets (e.g., China) >** Expand to new markets through bilateral agreements

## 6. Evolution beyond 2030

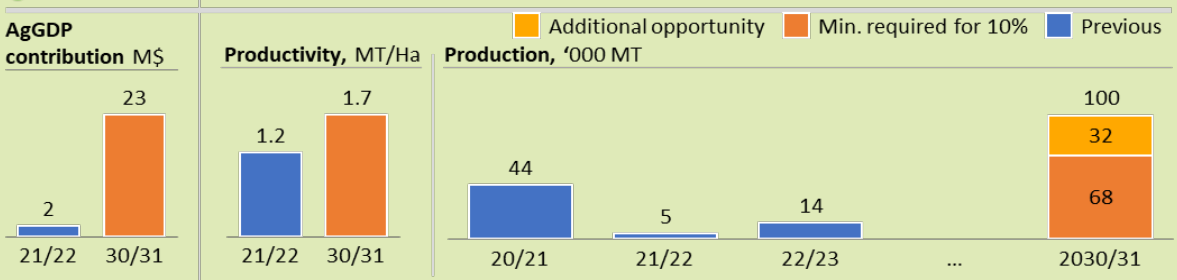
- **Scaling to broader value chains,** adapting to climate changes
- **Structured market system** and more coordinated sector
- **Increased engagement of organized farmers**
- **Increased import substitution,** investments in branding, commercial investment in production, processing
- **Focus on regulation,** infrastructure, market intelligence

# Commodity 14: Soya bean

## 1. Context

- **Soya bean is heavily used in Tanzania for both human consumption and animal feed, but >90% of that demand is satisfied through imports** (~52,000 MT was imported in 2021/22), indicating high potential for import substitution to help secure availability. The country's low soya bean production involves ~40,000 farming households over 4,500 ha of harvested area, due to which the commodity is heavily imported. Production being far behind demand limits the amount of animal feed available. However, domestic demand for soya bean is increasing due to growth in other sectors (e.g., poultry), export demand, and processing.
- **Challenges**: Soya bean in Tanzania has low yields, partly as a result of inadequate adoption of best practices and the limited use of improved seeds and fertilizers. Quality standards are also not harmonized. The sub-sector has limited R&D investment and a low level of processing. Overall, the value chain is fragmented.

## 2. Targets




## 3. Interventions

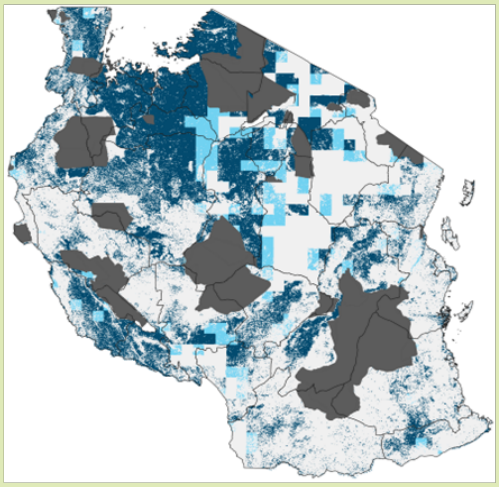
- **Develop, harmonize, and institute regulatory mechanisms** of agronomic**, storage, and processing standards** standards and guideline, **establish contract farming mechanisms** to protect parties and encourage investments, **regulate and license entities involved in marketing and processing** for quality control purposes and enforce licensing requirements to ensure compliance with standards, **promote sector coordination to attract more players**, especially organized producers and cooperatives to increase area of production, access to inputs and machinery *(Flagships 6, 9)*
- **Identify and allocate land** available for commercial wheat and soya farming *(Flagship 14)*
- **Conduct market-led identification of preferred soya bean seed varieties**, coordinate with TOSCI to facilitate certification, importation of seed volume necessary for commercial farming *(Flagship 2)*
- **Support the setting up and initial operations** of domestic producers to drive scale and lower cost of operations, for a pre-determined time window – exact policy vehicle to be determined e.g., derisking financing mechanisms, import quotas, targeted subsidies, etc. *(Flagship 4, 8, 13)*

## 4. Regional suitability

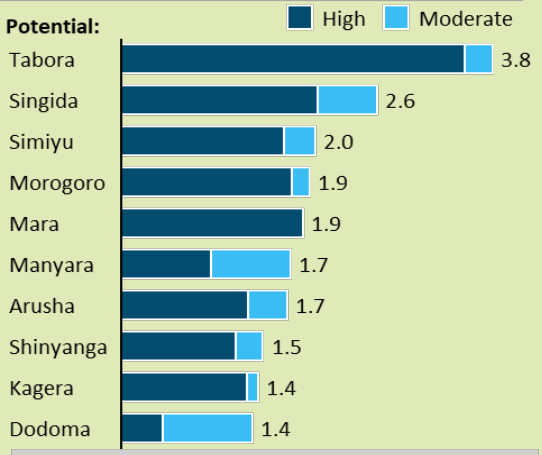
### Agronomic suitability of soya bean in Tanzania

**Suitability under rain-fed conditions:**

Unsuitable | High | Moderate | Protected areas



### Suitable area in regions, (million ha)




**Soya has high suitability in large parts of Tanzania**, particularly in Tabora, Singida and Simiyu (>2 million hectares)

## 5. Risks and mitigations

- **Climate change risks (e.g., drought, pests/disease, water shortage) >** Introduce CSA practices, new seed varieties, improved infrastructure
- **Price volatility due to market dynamics >** Promote market diversification, market information systems (MIS)
- **Lack of access to finance >** Facilitate access to credit and financial services

## 6. Evolution beyond 2030

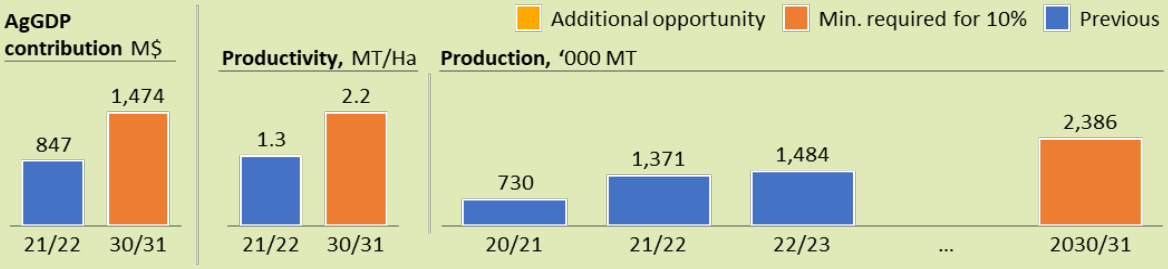
- **Scaling up to broader value chains** and adapting to climate changes to maintain sustainability, profitability
- **Increased engagement of organized farmers**
- **Increased commercial investment,** including in production, supply chain, infrastructure
- **Standalone well-coordinated wheat strategy and implementation plan**

# Commodity 15A: Pulses/beans - Kidney beans

## 1. Context

- **Kidney beans come in many varieties in Tanzania**, including rose coco, red kidney beans, and light speckled, all of which are exported. Other varieties (e.g., sugar, yellow, white, red speckled) are highly consumed by Tanzanians. Given Tanzania's large amount of land and diverse climate, there is potential to plant kidney beans throughout the year (with irrigation) in different regions. While Tanzania is the main market for kidney beans (prices have increased recently because of rising local demand), there is also a regional market. Large foreign investors have been involved in the value chain.
- **Challenges**: The challenges with kidney beans in Tanzania begin at the farm, where producers lack knowledge in planting practices and improved varieties, with many planting only locally-consumed seeds. Low quality of inputs and climate change effects lead to low productivity. Seed distribution is hampered by the lack of infrastructure. Once harvested, beans often come mixed together (leading to low quality in the absence of agronomic guidelines),requiring labor-intensive sorting to make them export-ready. Pests (e.g., weevils) are also a challenge. Furthermore, post-harvest management at the household level is inadequate and price uncertainties in export can create income instability.

## 2. Targets




## 3. Interventions

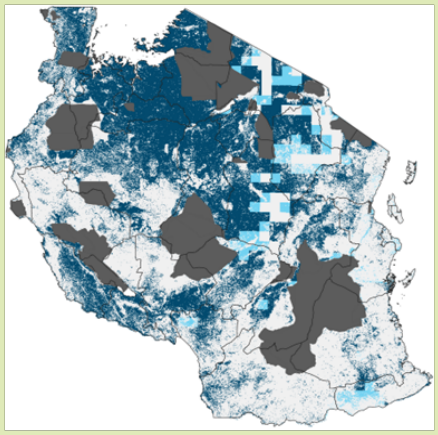
- **Provide farmers education** on which varieties to plant and modern farming techniques *(Flagship 12)*
- **Promote contract farming,** improved distribution mechanisms, cluster-level initiatives to enhance improved seed access *(Flagship 4)*
- **Institute data driven decision making structures** and regulatory frameworks to unlock Investments *(Flagship 11)*
- **Promote the use of non-export beans** as animal feed (to replace imports), **adopt staggered planting schedules** across different regions to ensure year-long production, **improve post-harvest management** through technology-enabled grading, washing and short-term storage *(Flagship 6)*
- **Grow agricultural production and export** through improving seed production, inputs, farmer registration, farmer organization, produce quality and creating market transparency and (Flagship 6, 9)

## 4. Regional suitability

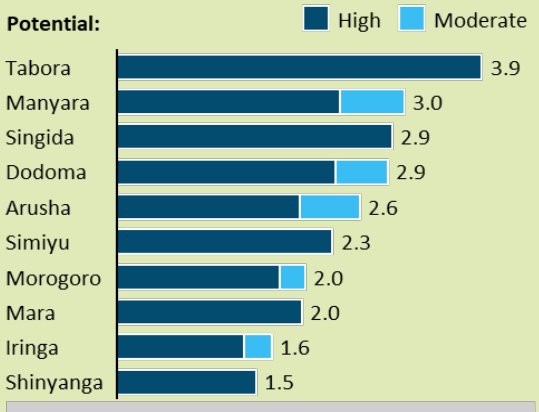
### Agronomic suitability of kidney beans in Tanzania

**Suitability under rain-fed conditions:**

Unsuitable | High | Moderate | Protected areas



### Suitable area in regions, (million ha)




**Kidney bean production has high suitability in large parts of Tanzania,** particularly in Tabora, Manyara and Singida (>2.8 million hectares)

## 5. Risks and mitigations

- **Climate, pests and diseases** > Introduce CSA practices, new seed varieties, improved infrastructure
- **Price volatility due to market dynamics** > Promote market diversification, market information systems (MIS)
- **Global competition** > Improve branding, develop new varieties, enter into bilateral agreements
- **Quality seed systems** (production and distribution), resulting in unqualified products > Increase capacity of ASA/TOSCI/TARI to do reproduction, develop market information systems

## 6. Evolution beyond 2030

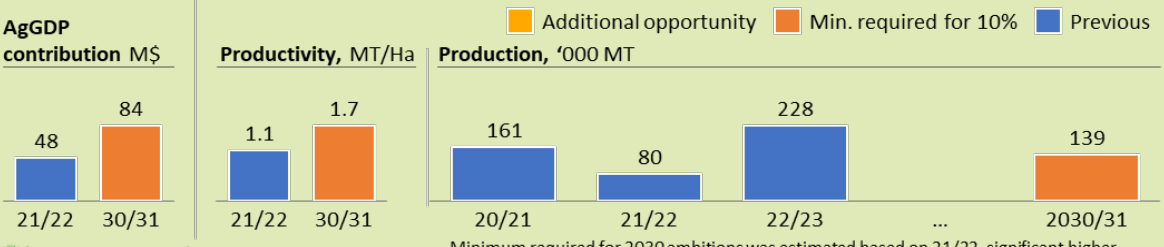
- **Increased production** that will make Tanzania a regional breadbasket
- **Structured and well-coordinated** market system
- **Adoption of advanced technology**

# Commodity 15B: Pulses/beans - Pigeon peas

## 1. Context

- **Tanzania's pigeon pea sub-sector has been growing over the past two years.** At the same time, there is growing global demand, especially from India (e.g., India's imports grew 34% to 1.2 million MT in 2023-24). Tanzania is third, behind Mozambique and Malawi in Africa in pigeon pea production, with potential to produce 400 MT/year. The sector has stronger standards than other beans given that the largest market is India. Given the large volume and importance for export, quality-promoting practices are maintained, including at the farm level. The three primary varieties are those grown in those in Morogoro/Dodoma, Mtwara and Arusha, the lattermost being the preferred in India. There are ongoing initiatives to better structure the market and promote processing.
- **Challenges:** Tanzania's pigeon pea subsector features challenges with the production, distribution and handling of improved seeds. Combined with climate change effects, this lack of access to quality inputs results in low productivity (1.6x less than Malawi's). The pigeon peas also tend to have a high moisture content (17 - 20% vs. the standard of <14%), which causes problems in processing. As with other pulses, the value chain also has challenges in post-harvest management, price fluctuations, market access and the absence of agronomic guidelines.

## 2. Targets




Minimum required for 2030 ambitions was estimated based on 21/22, significant higher potential possible however

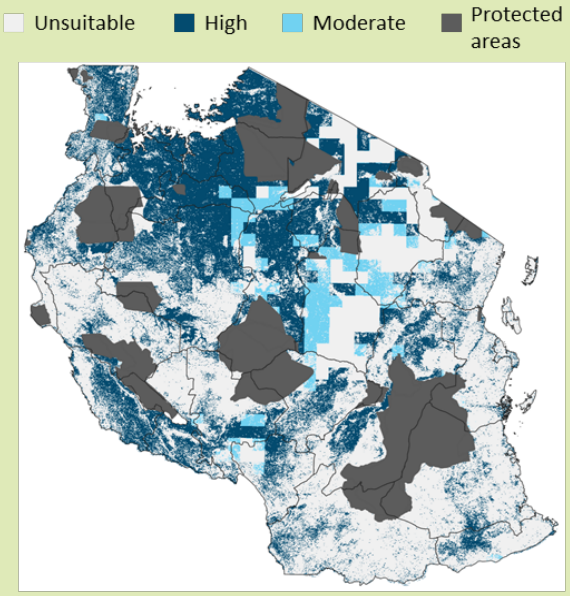
## 3. Interventions

- **Develop, harmonize, and institute regulatory mechanisms** of agronomic standards and guidelines, **establish contract farming mechanisms** to protect parties and encourage investments *(Flagship 4, 6)*
- **Increase focus on the better varieties** (e.g., introduce Arusha variety seeds in other regions) *(Flagship 2)*
- **Institute data driven decision making structures** and regulatory frameworks to unlock Investments *(Flagship 11)*
- **Introduce price discovery mechanisms** to reduce uncertainties, transparent pricing structures, and discourage collusion through regulatory measures ***(Flagship 6)***
- **Grow agricultural production and export** through improving seed production, inputs, farmer registration, farmer organization, produce quality and creating market transparency and *(Flagship 6, 10)*

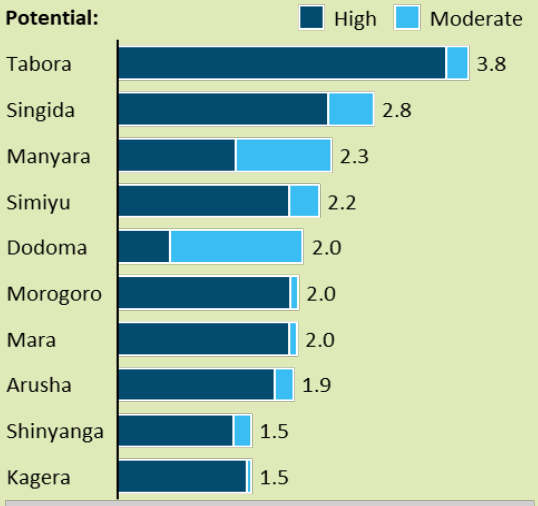
## 4. Regional suitability

### Agronomic suitability of pigeon peas in Tanzania

**Suitability under rain-fed conditions:**




### Suitable area in regions, % (mn ha)




**Pigeon pea production has high suitability in large parts of Tanzania,** particularly in Tabora, Singida and Manyara (>2.3 million hectares)

## 5. Risks and mitigations

- **Climate, pests and disease** > Introduce CSA practices, new seed varieties, improved infrastructure
- **Post-harvest losses** > Invest in infrastructure
- **Policy issues** (e.g., on the quota system) and over-reliance on the Asian export market > Diversify export markets
- **Global price volatility** > Diversify toward local consumption and the use as protein source after processing

## 6. Evolution beyond 2030

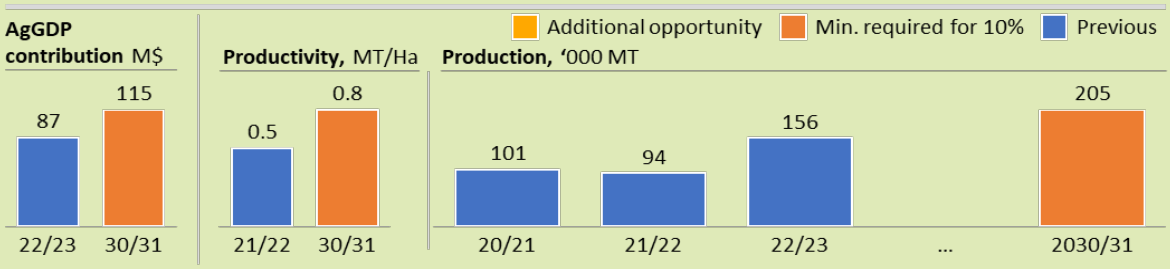
- **Structured market systems**
- **Leader in Africa** in pigeon pea production/export
- **Value addition** across the country
- **Increased investment in the supply chain** (production, processing, value addition)
- **Pigeon pea elevated** to a strategic commodity

# Commodity 15C: Pulses/beans - Green gram (Mung bean)

## 1. Context

- **Green gram is one of Tanzania's key pulses**, being among the commodities highlighted in the Pulses Roadmap and having a high production potential (including the ability to be grown in rice-cultivating areas). Globally, demand for mung bean is increasing, particularly in India (50% of consumption) and Asia-Pacific generally (75%), driven in part by increasing demand for vegan food (a market that will grow by ~11% p.a. to 2030) The primary export destinations are India, Pakistan (used for direct consumption) and Europe (used for sprouting). India has begun using a quota system in importing green gram from African countries, moving export demand to other Asian countries. While green gram is consumed in Tanzania, it is difficult to store.
- **Challenges:** Green gram in Tanzania has quality issues reflected in the small size of the beans (smaller than the typical 4 mm diameter), the fact that the beans are often mixed with other parts of the plant, and the bean's discoloration. Inputs are poorly distributed and agronomic standards are often not followed (e.g., grains are re-used to make seeds, which can lead to the spread of pests and disease). Farmers often do not have the knowledge or capacity to follow modern agronomic techniques. As a result of these various factors and climate change effects, productivity for this commodity is low.

## 2. Targets




## 3. Interventions

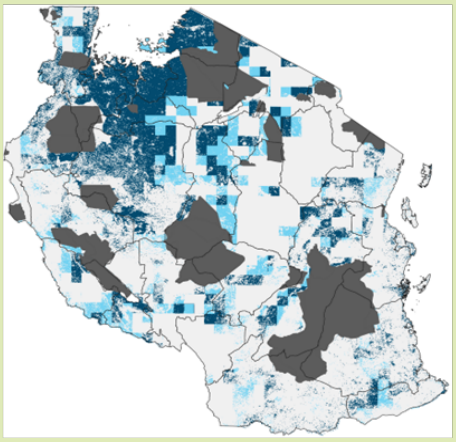
- **Invest in better varieties** which reflect market needs such as larger size, higher sprouting ability, etc. *(Flagship 2)*
- **Grow agricultural production and export** through improving seed production, inputs, farmer registration, farmer organization, produce quality; promoting domestic consumption and creating market transparency and *(Flagship 6)*
- Improve productivity through provision of **quality extension services, and tailored input** use enabled by digital farmer registration and farmer organization to build farmer capacity in soil, water and integrated pest management *(Flagships 6, 11, 12)*
- Increase resilience and food security through **adoption of climate smart practices** (e.g., soil health), **use of irrigation** to enable multi-cycle cultivation, and **expansion of food reserves** *(Flagships 1, 3, 15)*

## 4. Regional suitability

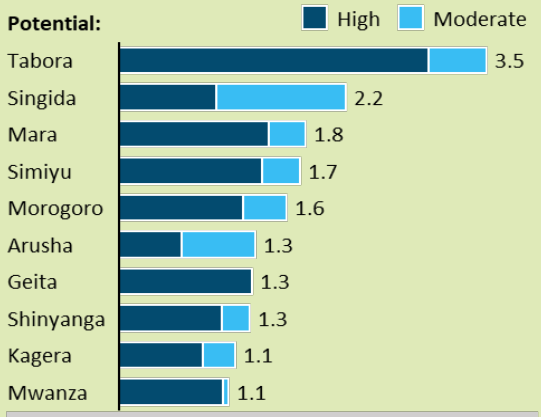
### Agronomic suitability of green gram in Tanzania

**Suitability under rain-fed conditions:**

Unsuitable | High | Moderate | Protected areas



### Suitable area in regions, % (mn ha)




**Green gram production has high suitability in large parts of Tanzania,** particularly in Tabora, Singida and Mara (>1.8 million hectares)

## 5. Risks and mitigations

- **Climate, pests and disease** > Introduce CSA practices, new seed varieties, improved infrastructure
- **Post-harvest losses** > Invest in infrastructure
- **Policy issues** (e.g., on the quota system) and over-reliance on the Asian export market > Diversify export markets
- **Global price volatility** > Diversify toward local consumption and the use as protein source after processing

## 6. Evolution beyond 2030

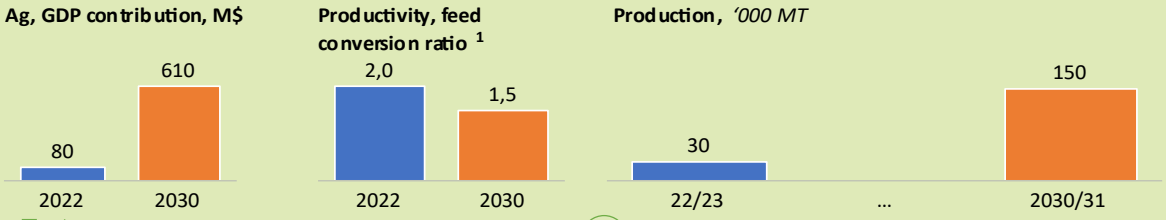
- **Structured market systems**
- **Leader in Africa** in pigeon pea production/export
- **Value addition** across the country
- **Increased investment in the supply chain** (production, processing, value addition)
- **Green gram elevated** to a strategic commodity (given that it can substitute beans and also find a market in the EU and regional AfCFTA markets)

# Commodity 16: Aquaculture

## 1. Context

- Aquaculture contribution to **fisheries GDP is low** (~4%), providing direct employment to **30k aquafarmers**. However, it is **growing fast**, i.e., from 220 MT in 2000 to ~30k MT in 2022, with 90% occurring in fresh water and ~10% in marine water. **86% of species** are **finfish** (i.e., 95% tilapia and 5% catfish and milkfish), **13%** are **seaweed**, **1% is crab, sea cucumber and prawn.** Farming systems mainly include **ponds and cages**, with **ponds accounting for 95% of production** (i.e., ~30k earthen ponds) vs ~45% in Uganda and **cages making up the remaining 5%** (i.e., ~993 cages). **Potential is high** with ~58 km² for freshwater and 64k km² for marine areas suitable for aquaculture.
- **Challenges:** limited productivity and higher cost of production than neighbors ( production cost of tilapia is estimated at 2.2 to 2.4 USD / kg vs 1.49 USD in Kenya) due to **limited access to inputs**: i) **limited supply of feed** (i.e., ~6k tons [1] available vs ~26k tons of demand), often of poor quality, and priced high (~70% of total cost), ii) **shortage of quality fingerlings**, esp. for mariculture, with 38 hatcheries [2] with a capacity to produce over 50 Mn fingerlings p.a. vs a demand of 120 Mn, iii) **lack of technical knowledge and business skills** among farmers. Leveraging **fish processor capacity** presents an opportunity to enhance processing and **boost medium-term exports**, dependent on **cold chain infrastructure improvements**.

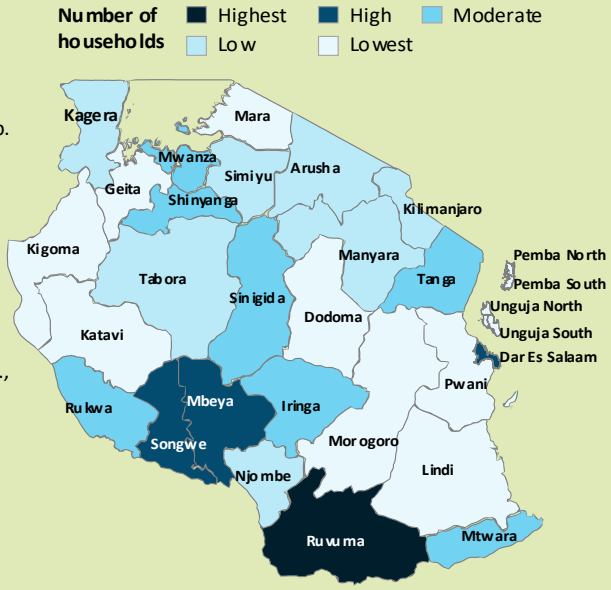
## 2. Targets




## 3. Interventions

- **Improve accessibility to suitable lands for aquaculture** *(flagship 14)*
- **Train aquaculture farmers on climate smart practices and monitoring of water quality** *(flagship 3)*
- **Mobilize aquaculture farmers into new groups** (esp. cooperatives) to enhance access to quality inputs and markets *(flagship 4)*
- **Set up a one stop shop** to streamline licensing process *(flagship 7)*
- **Accelerate the development of commercial aquaculture activities**, e.g., by providing equipment tax breaks (e.g., cages), **increasing access to high-quality inputs** (feed and fingerlings) by building, rehabilitating and leasing **government facilities** (e.g., hatcheries) and exploring aquaculture technologies through PPP arrangements *(flagship 8)*
- Increase accessibility to **existing fish infrastructure processing** and build one for **seaweed** *(flagship 9)*
- **Increase availability of cold-chain storage and transport infrastructure** to prevent PHL and ensure future exports *(flagship 10)*
- **Support aquaculture extension services** [3] by strengthening **Aquaculture Development Centres** (ADCs) by rehabilitating and expanding existing ADCs and establishing new ADCs in strategic locations and establishing **Aquafarmer Field Schools** to foster farmer to farmer extension of best management practices of aquaculture and enhancing research on aquaculture, the blue economy *(flagship 12)*

## 4. Fish farming practice by region (2019/20)




## 5. Risks and mitigations

**High resource use and water degradation from scaled production** > adopt climate-smart aquaculture such as water-saving techniques, selective breeding and energy-efficient feed technology

**Low uptake of new breeding services from farmers,** due to unfamiliarly and/or apprehension > raise awareness of benefits of improved breeds (e.g., extension agents)

## 6. Evolution beyond 2030

**Scale training on climate-smart practices to all aquaculture farmers,** to improve climate resilience/ decrease resource intensity as production increases

**Enhance the processing capacity and export potential of aquaculture** to meet the rising demand in regional markets as well as in the Middle East and Europe

1. ~2.7k MT produced by 10 local small / medium scale fish feed plants and ~3.5k MT imported by 10 feed importer; 2. private sector: 31, parastatals: 4 and government: 3; 3. Feed/ weight-Baseline productivity and increases in productivity will depend on animal breed/ exact interventions provided; using FAO avg. yield as baseline and estimating 30% productivity improvements; ensuring a minimum of one officer per district across all 186 districts

# Commodity 17: Poultry*

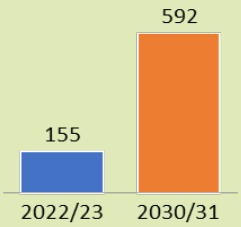
**Specifically focused on chicken meat for AMP*

## 1. Context

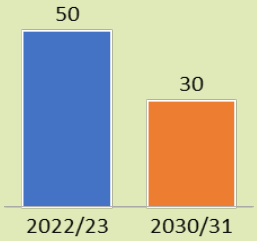
- Poultry is the **third largest contributor to livestock GDP (~20-25%) and contributes ~6% to overall ag. GDP. Poultry-keeping is the most common livestock-raising activity:** more than 4.3M households own chickens across Tanzania (57% of all ag. households), and poultry-keeping is an especially friendly source of employment for **women and youth**, given fast, regimented growth cycles and proximity of poultry-keeping activities to the home. However, **poultry consumption in Tanzania is low**: per capita consumption is ~1.1 kg, vs. 2 kg in Kenya and 7 kg in Zimbabwe. Poultry is also one of the most sustainable source of animal protein
- **Challenges: poultry consumption in Tanzania is low**: per capita consumption is ~1.1 kg, vs. 2 kg in Kenya and 7 kg in Zimbabwe. Challenges driving low consumption include the **high price of chicken meat**, which **is fueled by high chicken feed prices (~70% of the total cost of raising birds).** Additionally, **yields of meat/ bird in Tanzania are ~30% lower** than the East African average. While broiler chickens have higher yields than indigenous chickens, **consumer preferences are for freshly-slaughtered meat from indigenous birds**. Nevertheless, high potential exists to scale commercial broiler production **to increase national animal protein intake in a sustainable manner**, by fostering greater chicken meat consumption through price reduction.

## 2. Targets

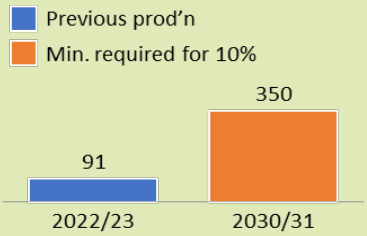
**Ag, GDP contribution,** M$




**Avg. mortality rate** (%) [1]




**Production,** 1000 mt




1. ECI Africa estimates that mortality rates of indigenous chicken is ~50%; with greater availability of affordable, high-quality vaccines, estimate is that mortality rate of indigenous chickens could be lowered to ~30% by 2030

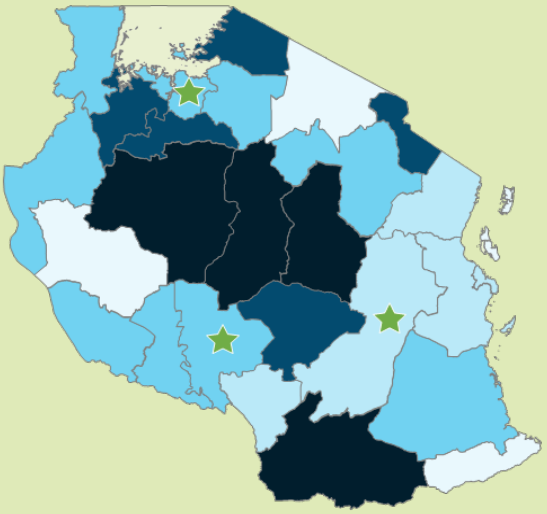
## 3. Interventions

- **Mobilize poultry keepers into new groups** to enhance access to inputs and markets, and **incubate farmer-facing SMEs wit specific linkages to poultry-specific inputs and markets** *(Flagship 4)*
- **Mitigate barriers to conducting ag-business** to de-risk chicken raising operations for new and existing commercial players *(Flagship 7)*
- **Support and incentivize commercial players to scale broiler meat production to 130M tons/year**, through tax breaks for construction of integrated vertical farms and lower prices of poultry feed inputs (maize, soya) *(Flagship 8)*
- **Upgrade and construct new processing facilities with capacity of ~260M tons/year,** for birds raised from both smallholders and commercial players *(Flagship 9)*
- **Procure cold-chain storage and transport facilities** to enable operations and prepare for future exports *(Flagship 10)*

## 4. Chicken Population by region (2019/20)

★ Highest population of broiler chickens

**Population:** Highest, High, Moderate, Low, Lowest



## 5. Risks and mitigations

**Delayed productivity improvements in maize/ soya for lower-cost poultry feed** > Explore and deploy additional supports to private sector for lower feed costs (e.g., tax breaks on imported raw materials*)

**Slow/limited increase in consumer preferences for more broiler chicken meat**> consistently assess shifts in consumer preferences vs. price changes (between TCPA and MLF), before deciding how much to scale up commercial broiler production, run campaigns

## 6. Evolution beyond 2030

**Continue assessing consumer preferences and scale production accordingly,** to make chicken meat a leading source of animal protein in TZ diet

**Expand broiler chicken meat production to export markets,** esp. where cost of raising chickens is higher (e.g., Kenya)

*VAT was already removed for locally-produced feed in 2017/2018 financial year

# Commodity 18: Red meat

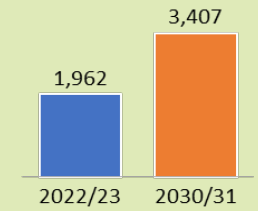
## 1. Context

- Red meat (beef, goat meat, mutton) is the **largest contributor to livestock GDP (~50%) and contributes 11% to overall ag. GDP. 2M+ households** own red meat animals (26% of all ag. households). Tanzania has the second largest livestock population in Africa (after Ethiopia), and red meat (especially beef) is a **staple component of the Tanzanian diet**, with beef and goat meat/mutton comprising 60% and 12% of daily per capita energy from all meat products, respectively. Additionally, Tanzania is a leading exporter of goat meat/ mutton (95% of all livestock exports).
- **Challenges:** first, **higher potential exists when considering productivity of cattle**: beef yields/ carcass weight are 140 kg/head in Tanzania, versus 152 kg/head for the East African average. Additionally, across all types of red meat, **processing activity is low, at <3%.** Increased processing would promote potential to satisfy domestic niche/ high-end markets, as well as **increase regional/ international export potential** (95%+ of beef production is consumed in local markets). As red meat production increases, a keen focus should be placed on **adopting climate-smart practices**, given the high resource intensity of raising red meat animals relative to livestock rearing in other value chains.

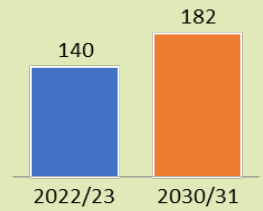
## 2. Targets

Previous prod'n | Min. required for 10% | Additional opportunity

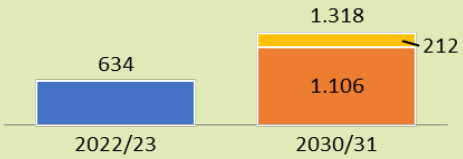
**Ag, GDP contribution,** M$




**Productivity,** yield/ carcass weight (kg)[1]




**Production,** 1000 mt




## 3. Interventions

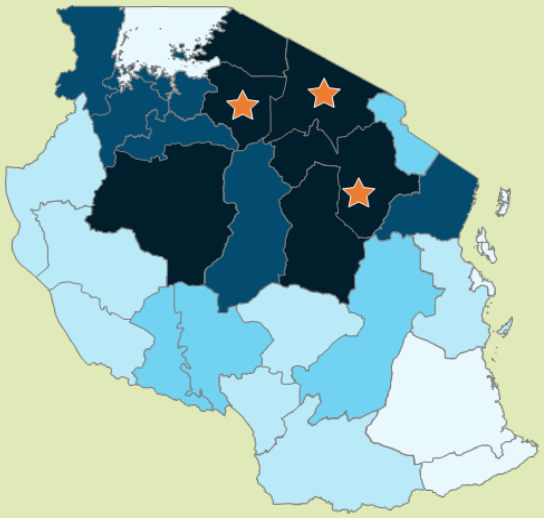
- **Improve accessibility to suitable lands for grazing,** to enhance animal quality and reduce land conflicts *(Flagship 14)*
- **Train 15K+* livestock keepers on climate smart practices and monitoring of soil quality,** to improve productivity and build resilience *(Flagship 3)*
- **Expand national livestock traceability platform to ~5M new red meat animals,** to improve monitoring and tracking of animals *(Flagship 5)*
- **Increase access to high-quality inputs (10M tons/ of commercial fodder/ year, 50% vaccine coverage for priority diseases, and 2.3M new specialized/ cross-bred/ improved animals)** to boost overall meat quality *(Flagship 5)*
- **Pilot 3 community small ranches and scale to 400+ ranches,** to improve red meat animal productivity and market access, through guaranteed offtake agreements *(Flagship 5)*
- **Increase availability of cold-chain storage and transport infrastructure** for future exports *(Flagship 10)*

**15K smallholders will be trained on CS practices for fodder production, but more will be trained by extension; exact # unknown*

## 4. Cattle population by region (2019/20)

★ Highest population of improved beef cattle (incl. specialized, cross-bred, and improved indigenous animals)

**Population:** Highest | High | Moderate | Low | Lowest



## 5. Risks and mitigations

**High resource usage (incl. land degradation) from increased production** > adopt climate-smart practices, such as rotational grazing, plant cover, soil-based carbon sequestration

**Low uptake of new breeds/ breeding services from smallholder farmers,** due to unfamiliarly with different breeds and/or apprehension against AI > raise awareness of benefits of adopting improved breeds (e.g., through extension agents)

## 6. Evolution beyond 2030

**Scale training on climate-smart practices to all livestock keepers,** to improve climate resilience/ decrease resource intensity as production increases

**Increase processing and exports of all red meat** to cater to growing red meat market (esp. in Middle East), and given TZ's relatively large livestock population

1. Baseline productivity and increases in productivity will depend on animal breed/ exact interventions provided; using FAO avg. yield as baseline and estimating 30% productivity improvements from ~24 month feeding regime

# Commodity 19: Dairy

## 1. Context

- Dairy is the **second largest contributor to livestock GDP (~25-30%)** and **contributes 7.6% to overall ag. GDP.** Dairy farming is a critical source of employment, **especially for women.*** Dairy consumption has substantial **nutritional benefits** (such as Vitamins A and D, calcium, potassium, and phosphorous), **however consumption of milk in Tanzania is low,** relative to peers (<50 liters per capita in Tanzania, vs. ~100 liters in Kenya).

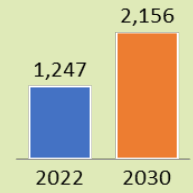
- **Challenges: lower productivity of dairy animals** (milk yields/ animal are 400 liters per year in Tanzania, versus 520 for the East African average). Lower productivity **reduces the incentive for farmers to bring their milk to formal collection points**, leading to a higher prevalence of **home consumption and/or informal sales between neighbors**. Additionally, given low collection rates, **milk processing rates are also low, estimated at ~3% nationwide**. Increased processing activity would **address health concerns associated with local consumption of unpasteurized milk** and **fulfill local demand for higher-end dairy products,** while creating future opportunities to boost regional exports.

* Given greater proximity of dairy farming activities to the home, relative to red meat animal raising, for example

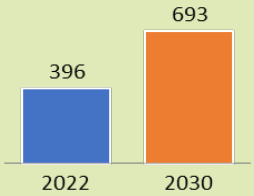
## 2. Targets

Previous prod'n | Min. required for 10% | Additional opportunity

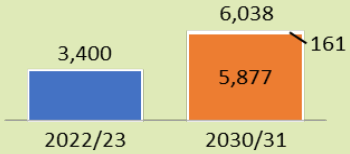
**Ag, GDP contribution,** M$




**Productivity,** milk yield/ head/ yr. (liters)[1]




**Production,** 1000 mt



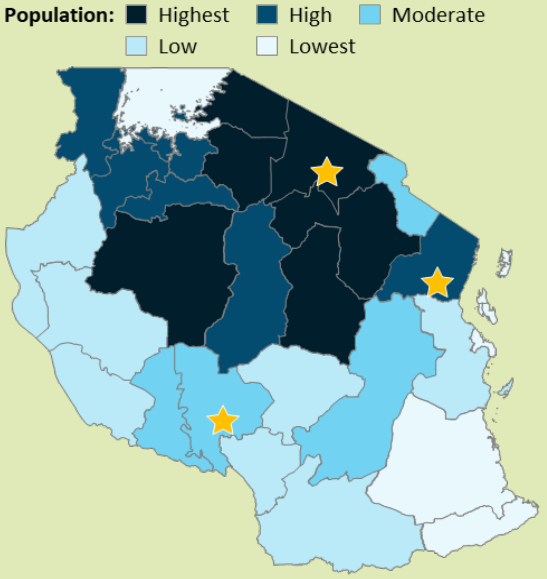

1. Baseline productivity and increases in productivity will depend on animal breed/ exact interventions provided; using FAO avg. yield as baseline and estimating 75% productivity improvements from ~36 month feeding regime for indigenous cattle breeds

## 3. Interventions

- **Improve accessibility to suitable lands for grazing,** to enhance animal quality and reduce land conflicts *(Flagship 14)*
- **Mobilize dairy farmers into new groups** (esp. cooperatives) to enhance access to inputs and markets *(Flagship 4)*
- **Train 15K+ livestock keepers on climate smart practices and monitoring of soil quality,** to improve productivity and build resilience *(Flagship 3)*
- **Expand national livestock traceability platform to ~5M new dairy animals,** to improve tracking of animals *(Flagship 5)*
- **Increase access to high-quality inputs (10M tons/ of commercial fodder/ year, 50% vaccine coverage for priority diseases, and 2.3M new specialized/ cross-bred/ improved animals)** to boost overall meat quality *(Flagship 5)*
- **Construct 70 new Milk Collection Centers (MCCs) and increase capacity at 80 existing MCCs**, to enable higher offtake rates *(Flagship 5)*
- **Pilot 3 community small ranches and scale to 400+ ranches,** to improve **dairy productivity and market access**, through guaranteed offtake agreements *(Flagship 5)*
- **Increase milk processing capacity for an additional 1.2M liters/ day,** to promote greater consumption of pasteurized milk and other dairy products *(Flagship 9)*
- **Increase availability of cold-chain storage and transport infrastructure** to enable operations by protecting products, and for future exports *(flagship 10)*

## 4. Cattle population by region (2019/20)

★ Highest population of improved beef cattle (incl. specialized, cross-bred, and improved indigenous animals)




## 5. Risks and mitigations

**Limited shift in consumer preferences for more processed dairy** > consider piloting consumer awareness campaigns to demonstrate nutritional/ health benefits

**Low uptake of new breeds/ breeding services from smallholder farmers,** due to unfamiliarly with different breeds and/or apprehension against AI > raise awareness of benefits of adopting improved breeds (e.g., through extension agents)

## 6. Evolution beyond 2030

**Scale training on climate-smart practices to all livestock keepers,** to improve climate resilience/ decrease resource intensity as production increases

**Encourage increased consumption and scale production of processed milk,** until Tanzania per capita consumption reaches FAO guidelines (~50 liters/ day vs. 200 liters/ day recommended)

# Commodity 20: Fodder*

**Specifically focused on tradeable seeds, grasses, and grains*

## 1. Context

- Fodder production is a **relatively nascent sector** and is currently a small contributor to livestock GDP (<1%) and less than 0.1% of overall ag. GDP . **An estimated <1 million tons of fodder* is produced today** (not including demarcated pasture lands), but the sector is **quickly growing** as **supplementary feed (silage, hay) is a critical source of energy to increase livestock productivity**. For example, consistent feeding regimes** for indigenous cattle can improve milk yields from ~1.5 liters/ day to 5+ liters/ day, and beef cattle fattening significantly boosts animal quality for niche/export markets. Additionally, **fodder can be stored for consumption during adverse climate conditions** (e.g., prolonged drought that reduces pasture quality). Given these productivity and resilience benefits, there is a **tremendous opportunity to scale commercial fodder production**, both through larger commercial players and smallholder farmers. While commercial players typically have higher yields (~2X+ that of smallholders), smallholders can tailor production to their animals/ feel empowered to provide a consistent feeding regime. Both commercial players and smallholders should **incorporate climate-smart practices,** such as sustainable land management for optimal carbon sequestration, when scaling production.
- **Challenges: Limited productivity** (esp. for smallholder-led production), given limited mechanization equipment and irrigation, and sometimes lower quality seeds); **low willingness to pay for fodder** if smallholders don't see immediate benefits (~750,000 TZS/ ton of fodder)

*Some of the most abundant fodder species include: buffel grass, rhodes, brachiaria, juncao, alfaalfa, and centrocema. scaled production.
**Feeding cattle 3% of body weight for 4-5 years

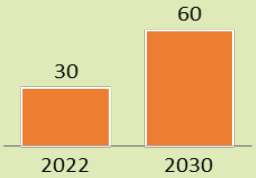
## 2. Targets

Previous prod'n | Min. required for 10% | Additional opportunity

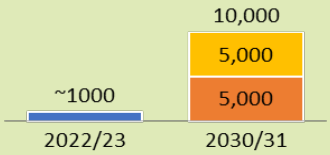
**Ag, GDP contribution,** M$

*N.A.*

**Production**, tons/ ha[1]




**Production,** 1000 mt



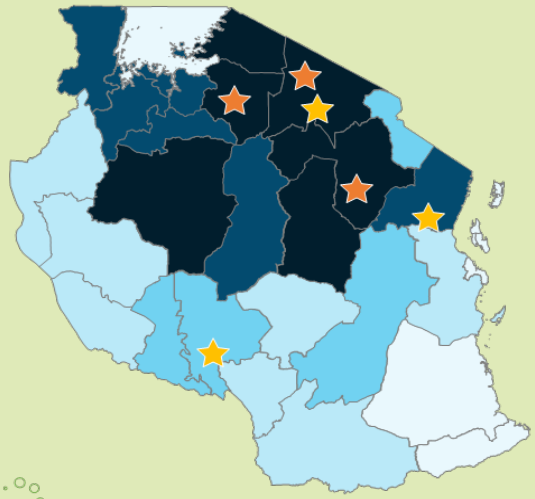

## 3. Interventions

- **Register fodder producers in farmer registration database,** including average production, species, and location *(Flagship 11)*
- **Improve accessibility to suitable lands for fodder production,** to enhance yields and reduce land conflicts *(Flagship 14)*
- **Train and equip 15K+ smallholders in commercial fodder production to collectively produce 1M tons of fodder/year** through Farmer Field Schools and BBT-LIFE; smallholders will be given small land parcels (1.2 Ha each), seeds, and required mechanization/ equipment for production *(Flagship 5)*
- **Provide supports and incentives to ~900 commercial fodder producers to create 9M tons of commercial fodder/year,** including land contract identification and seeds *(Flagship 5)*
- **Improve access to high quality physical/digital extension services** to boost fodder production yields *(Flagship 12)*

## 4. Cattle population by region (2019/20)

Highest population of improved dairy cattle
Highest population of improved beef cattle

**Population:** Highest | High | Moderate | Low | Lowest



## 5. Risks and mitigations

**Increasingly hot/ dry climate for fodder production and fattening services** > innovate on seed varieties that are more adaptable/ train SHF on hay production for storage (esp. during prolonged dry season)

**Limited/delayed uptake of commercial fodder from smallholders, given low affordability** > consider partial subsidies/ other supports to for smallholders to buy fodder, based on cost-benefit analysis of projected productivity gains

## 6. Evolution beyond 2030

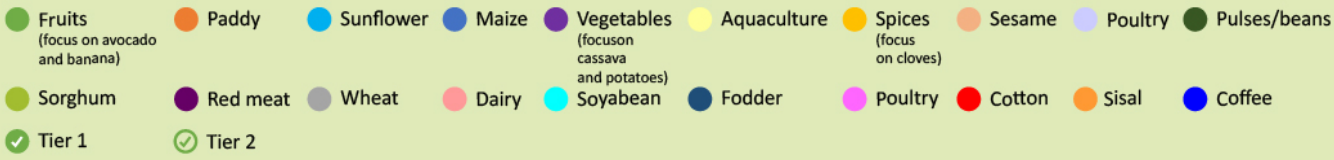
**Scale training to all smallholders to ensure that all animals have consistent feeding regimes,** to maximize milk/ meat yields

**Innovate on and scale multiplication of fodder seed varieties that are best suited** to Tanzanian agro-ecological zones

1. Baseline productivity and increases in productivity is highly variable and depends on species of fodder and inputs used, including seed varieties, presence of irrigation systems, etc.

## E. The AMP's regional perspective

The AMP is a national strategy but its implementation will require close collaboration with local government authorities for successful implementation. In addition to setting clear guidelines for collaboration, it is critical that the AMP is internalised by local government authorities, and that detailed implementation plans are prepared together with them. This section provides an overview of key flagships and commodities by region to help guide this cascading exercise. In itself it is no substitute for the vital work still to be done with local government authorities to develop regional plans that both build on the AMP but are also guided by local priorities and specificities.




| Regions | Flagships | Cultivated area, Mha | Potential land area, Mha | Commodities |
|---|---|---|---|---|
| Mara | 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 | 1.0 | 0.9 | |
| Mbeya | 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 | 0.7 | 0.6 | |
| Morogoro | 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 | 0.7 | 1.2 | |
| Mtwara | 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 | 0.3 | 0.1 | |
| Mwanza | 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 | 1.0 | 0.1 | |
| Njombe | 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 | 0.6 | 0.2 | |
| Pwani | 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 | 0.1 | 0.4 | |
| Rukwa | 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 | 0.8 | 0.4 | |
| Ruvuma | 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 | 0.2 | 0.5 | |
| Shinyanga | 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 | 1.2 | 0.3 | |
| Simiyu | 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 | 1.3 | 1.0 | |
| Singida | 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 | 1.5 | 1.4 | |
| Songwe | 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 | 0.5 | 0.3 | |
| Tabora | 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 | 2.6 | 1.3 | |
| Tanga | 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 | 0.1 | 0.8 | |

# 5 Implementation modalities of the AMP

# 5. Implementation

## A. Governance

**Effective governance of Tanzania's Agriculture Master Plan (AMP) will be essential to underpin success. This means robust coordination and implementation mechanisms are required**. Inter-ministerial collaboration, together with the orchestration of various stakeholders including local government authorities, will be especially important if the ambitious targets that have been set are to be achieved. A multi-layered governance structure can ensure cohesive efforts across the agricultural sector.

**A well-designed governance framework is also essential to facilitate flagship interventions for prioritised commodities**. Addressing the challenges within commodity chains, such as inconsistent produce quality and availability, is crucial for attracting investments. For instance, a lack of sufficient quality produce all through the year can deter investments in processing facilities. A governance model that adopts an agri-industrial perspective and establishes commodity compacts across food systems can help overcome these obstacles, streamlining supply chains and enhancing agricultural output.

**The Ministry of Agriculture and the Ministry of Livestock and Fisheries, supported by the Agriculture Transformation Office (ATO), will spearhead the development of this governance structure**. This initiative will incorporate valuable insights from Tanzania's experiences and global best practices, aiming to create a robust framework that addresses the unique challenges of Tanzania's agricultural sector.

**Once established, the governance framework will enable the ATO to play a crucial role in the coordination and effective implementation of the AMP**. Strategic alignment of efforts across the agricultural sector can foster sustainable development and achieving the AMP's ambitious goals.

## B. Financing

**To implement the AMP effectively, Government financing is paramount**. This will require annual estimates and these have been made for every initiative in each flagship, with clear differentiation between direct Government investment and tax incentives. Such meticulous financial planning is crucial for aligning the AMP's requirements with the Government's annual budget cycles across relevant Ministries. The Agriculture Transformation Office (ATO) will play a pivotal role in translating these financial needs into specific budget line items, in collaboration with entities like the Department of Planning and Policies (DPP). This process will also involve evaluating the most suitable financing mechanisms—such as Programme-for-Results (P4R), project financing, and winning the support of Development Partners drawing on lessons from past experiences to inform decision-making.

**Moreover, ensuring continuity of funding for ongoing projects and programmes is vital**. In particular, it is important seamlessly to integrate financing commitments from the pillars of the Agriculture Sector Development Programme II (ASDP II) with the AMP. This integration is facilitated through a comprehensive mapping between ASDP II and the AMP, ensuring a smooth transition and sustained financial support for agricultural development initiatives (see below).

*Table 9: Link between the AMP and the ASDP II priority investment areas*

| ASDP II Priority Investment Areas | Agriculture Master Plan |
|---|---|
| ***Component 1: Sustainable water and land use management*** | |
| 1. Land use planning and watershed management | Flagship 14 focuses on developing comprehensive land management systems, to strengthen land use planning |
| 2. Irrigation infrastructure development | Flagship 1 supports both the development of new irrigation schemes, their management, and the strengthening of existing schemes |
| 3. Irrigation scheme management and operation | |
| 4. Water sources development for livestock and fisheries | Flagship 6 includes the development of water sources (bore holes) for livestock in community small communal ranches |
| 5. Promote climate-smart agriculture (CSA), technologies, and practices | Flagship 3 focuses on transitioning farmers to sustainable agriculture practices |
| ***Component 2: Enhanced agricultural productivity and profitability*** | |
| 1. Strengthening agricultural extension, training, and promotion/info services | Flagship 12 aims to strengthen and scale extension services (both through physical and digital services) |
| 2. Improvement of access to crops, livestock, and fisheries inputs and health services | Flagship 4 supports smallholders' access to inputs by organising them into groups (e.g., cooperatives, associations) and developing the agri-SME ecosystem that will support smallholder groups |
| 3. Research and development | Flagship 2 will support the acceleration of Government seed production and support private seed producers (including through R&D)<br><br>Flagship 3 will support mapping and placing land under restoration to improve resilience<br><br>Flagship 5 includes livestock research for creation of a new improved indigenous cattle breed<br><br>Flagship 12 will support extension services to more effectively disseminate latest agricultural technologies and train smallholders in climate-smart practices |
| 4. Strengthen and promote agricultural mechanisation | Flagship 4 supports smallholders' access to inputs (including mechanisation, such as tractors, hand hoes, fishing gears, etc.) through development of the farmer-facing SME ecosystem, and construction of mechanisation hubs for smallholders to purchase/lease equipment |

| | |
|---|---|
| 5. Food and nutrition security improved) | Prioritisation of commodities included food security and nutrition to increase the availability of proteins (dairy, poultry, aquaculture), overall nutrient intake (fruits and vegetables), and the availability of stable crops (wheat, maize)<br><br>Flagship 15 will support strengthening the early warning systems, enhancing food security |
| ***Component 3: Commercialisation and added value*** | |
| 1. Develop market access for all priority commodities | Flagship 4 supports smallholders' access to inputs by organising them into groups (e.g., cooperatives, associations) and developing the agri-SME ecosystem that will support smallholder groups<br><br>Flagship 10 supports facilitation of access to international markets |
| 2. Develop market access for fisheries and livestock products. | |
| 3. Development of processing and added value for crop, livestock, and fisheries products | Flagship 9 promotes the development of processing facilities and capacity for prioritized commodities |
| ***Component 4: Sector enablers, coordination, M&E*** | |
| 1. Policy and Regulatory Framework and Business Environment Improvement | Flagship 7 supports the development of the business environment, including mitigating the largest barriers to specifically doing agri-business (including export) |
| 2. Strengthening organisational and technical capacities of existing and new small-scale producer, trade and processing farmer organisations and cooperatives movement | Flagship 4 supports smallholders' access to inputs by organising them into groups (e.g., cooperatives, associations) and developing the agri-SME ecosystem that will support smallholder groups |
| 3. Promote and strengthen gender inclusiveness in the agricultural sector | Flagship 2 supports young people and women to become successful seed entrepreneurs<br><br>Flagship 4 supports youth-led agri-SMEs (especially through the BBT programme) and emphasises formation of female groups (e.g., cooperatives)<br><br>Flagship 12 emphasises ongoing refreshers and capacity building for women working as extension agents, who typically experience less opportunities for ongoing training<br><br>Flagship 14 supports increased land access, with an emphasis on access for women and young people |
| 4. Improve and strengthen vertical [from (President's Office - Regional | AMP flagships are designed considering current governance structures and opportunities to |

| | |
|---|---|
| Administration and Local Government (PO-RALG) to Regional Secretariats (RSs) and Local Government Authorities (LGAs)] and horizontal coordination between Agricultural Sector Lead Ministries (ASLMs) | establish new coordination mechanisms. The ATO will also support increased coordination across various entities for implementation of the AMP. |
| 5. Improved capacity and agricultural data collection and management systems | Flagship 11 supports better data collection through robust digital platforms<br><br>ATO will support the capacity of the Government regarding data collection and management |
| 6. Management Capacities and Systems Improvement | N/A |
| 7. Develop Agricultural Sector M&E System | ATO will support the M&E framework of the Government for the AMP |
| 8. Improvement of capacity at all levels | ATO will support some targeted capacity building |
| 9. Improvement of Information and Communication Technologies (ICT) for Agricultural Information Services and Systems | Flagship 11 will support the digitalisation of farmer registration and the entire agriculture ecosystem (including extension services, real-time market information, etc.) |
| 10. Provide microfinance services | Flagship 13 supports access to a variety of financing mechanism for smallholders |

Private sector investment is just as important for the transformation envisioned by the AMP. While Government financing lays the foundation, attracting private sector investment into the country's food systems is essential for achieving the plan's ambitious goals. The Government, supported by the ATO, is tasked with creating an enabling environment that stimulates private investment, acknowledging that while such investments are beyond direct Government control, they should be actively encouraged and supported to foster a vibrant agricultural sector.

## C. The AMP's contribution to Tanzania's existing commitments

**The Agriculture Master Plan (AMP) of Tanzania is designed to play a central part within the nation's broader economic transformation, aiming for seamless alignment with both current and evolving national visions**. The vision for food systems by 2050 is being aligned with the broader goals set out by the Planning Commission, ensuring objectives are in line with the overarching vision being developed for the country. This strategic alignment extends to historical frameworks as well, with the AMP ensuring coherence with the Five-Year Development Plan III (FYDP III), a pivotal document that outlines the country's development trajectory. The details of this integration are comprehensively outlined in the Annex.

**Internationally, Tanzania has pledged its commitment to several pivotal agreements that shape global food systems, necessitating their reflection within the AMP**. These include the Malabo Declaration from the Comprehensive Africa Agriculture Development Programme (CAADP), the United Nations' pathways for sustainable food systems, and the commitments made at Dakar 2. The AMP meticulously incorporates the mandates and goals of these international frameworks and commitments, thus ensuring its strategies are not only locally

relevant but also globally responsive. This alignment underscores Tanzania's dedication to fulfilling its international obligations, with the Annex detailing how the AMP addresses the requirements and commitments stipulated by these international agreements.

**Furthermore, Tanzania's commitment to a significant reduction in emissions — targeting a 30-35% decrease by 2030 from a business-as-usual scenario — has played a critical role in shaping the AMP**. This ambitious goal, outlined in the Nationally Determined Contributions (NDC), necessitates the implementation of mitigation measures across several sectors, including agriculture, livestock, coastal, marine, fisheries, and land use. The AMP is intricately aligned with these measures, ensuring that agricultural practices contribute effectively to the country's climate objectives. This alignment not only highlights the AMP's environmental stewardship, but also positions the plan as a key instrument in achieving Tanzania's broader climate targets, as detailed in the Appendix.

## D. Six key elements to ensure successful implementation of the AMP

**Learnings from other transformations as well as from experiences in Tanzania were considered in the design to ensure successful implementation. A recap of the key elements can be found below:**

### The AMP focuses on six critical elements to ensure successful implementation

#### Yearly targets

The masterplan sets annual targets for the key metrics, including agricultural growth rate, yield, average income, and export values, in addition to having more specific targets for each flagship. These targets act as milestones, allowing for the continuous evaluation of progress and adjustment of strategies as needed throughout the implementation.

#### Transformation driven by the Agriculture Transformation Office

The presence of a dedicated Agriculture Transformation Office signals institutional support and expertise committed to driving the plan's execution. The ATO will coordinate and support the implementation of the agriculture masterplan, working closely with the Delivery Unit at the MoLF to ensure coordination and collaboration across the ministries.

#### Built-in accountability mechanisms

Accountability is embedded within the plan through specific mechanisms and processes to monitor, evaluate, and ensure that responsible entities are answerable for their actions and decisions. This includes regular reporting and assessment of progress as well as identifying the key accountabilities for the various components of the AMP.


#### Focus on the "How"

The Master Plan prioritizes outlining the practical methods, strategies, and implementation steps to transform the agriculture sector. The flagships in this Master Plan are highly actionable with a clear roadmap and cover both sector specific interventions as well as cross-cutting ones.

#### Clear link to financing

: The Master Plan establishes a direct correlation between its goals and objectives with the cost required to achieve them on a yearly basis. It outlines how financial resources will be allocated, specifying the budgetary provisions for different initiatives within the agricultural sector, thereby ensuring the basis for adequate financial backing for implementation.

#### Prioritisation of flagship and commodities

The Master Plan identifies and emphasises key interventions or projects that have a significant impact on the agricultural sector. By focusing on these flagship interventions and on critical commodities, the plan allocates resources, attention, and efforts where they will yield the most substantial outcomes, avoiding scattering resources across numerous initiatives and commodities. The path to prioritisation is highly robust, built on insights from a diverse array of sources and stakeholders.

# 6 Annex

# 6. Annex

## A. Examples of successful agricultural transformation

***Costa Rica***[113]

**Costa Rica is a South American country of roughly 5 million people with a diversified agriculture and export-reliant economy.** The country's exports experienced uninterrupted growth from the 1980s onwards. In 2014, agriculture and food exports made up 35% of those exports, but the country has been branching out to medical and technology exports as well. Agriculture comprises ~5% of GDP and employs ~13% of the population. The main agricultural products are green coffee (18% of total harvested area in 2019), oil palm fruit (~15%) and sugar cane (12%). Chicken, cattle, pigs and horses are also an important part of the agricultural landscape.

**Starting in the 1980s, Costa Rica started facing numerous challenges in both its economy and agriculture.** The import substitution model that the country had been following since the 1960s had been exhausted by the 1980s. Moreover, between 1980 and 1982, the economy had contracted by 9.4% and the proportion of Costa Ricans living in poverty had risen by 20% (to 54%). Oil price increases, a quadrupling of external debt and decreases in FDI further exacerbated the problem. These conditions required the opening up of the economy, including its agriculture.

**The reforms of the 1980s moved Costa Rica from import substitution to trade liberalisation.** For agriculture specifically, the goals were to grow and increase diversification and sophistication. The reforms led to increased deregulation, privatisation and the reduction of trade barriers. The agricultural sector also saw institutional reforms. Externally, the country had joined GATT and WTO, among others. Some of the product-specific interventions included:

- Coffee: a focus on specialty coffee, the setting up of the ICAFE industry association, sustainability-related branding, the establishment of the National Fund for Coffee Stabilisation, the development of cooperatives
- Banana: the creation of the National Banana Corporation, which led to significant investment in R&D, improved marketing support and financial support
- Pineapple: trade liberalisation (including eliminating price controls, removing export taxes, reducing tariffs), increase in land use for pineapple (7x in 1990-2013), increase in productivity of that land, FDI (50% of plantations owned by foreign investors), new institutions, tax exemptions, value chain development
- Livestock: land use changes, a focus on sustainability and climate change mitigation (e.g., One Health, Livestock Plus programmes), increase in silvopasture (combining trees with agricultural production).

**As a result of these efforts, agricultural output increased dramatically, particularly for non-traditional exports and livestock products.** For example, pineapple's share in

[113] Focus Economics, World Bank, Trading Economics, OECD, Global Coffee Report, World Property Rights Organisation, FAO, FAOSTAT, UNDP, Washington Post

agricultural output went from 9% to 24% between 1995 and 2013; livestock increased from 17 to 27%, palm oil doubled, and dairy increased by 105%.

***Ghana***[114]

**Ghana is a West African country with a population of >30 million and a growing economy focused on gold, crude oil and cocoa exports (together making up 80% of all exports).** The country has experienced continued growth for over 30 years, including in in the late 1980s/early 1990s when the rest of SSA was in a slump. In recent years, growth has accelerated even further and poverty has halved from 1990s levels, partly driven by the discovery of oil, but also thanks to economic reforms executed from 1984 onwards. Agriculture is a major part of this economy, accounting for 20% of GDP and 52% of employment. The main products are cocoa (18.4% of total area in 2019), maize (17.6%) and cassava (12.8%), with chicken, goats, sheep and cattle being the main livestock.

**The agricultural sector was not, however, without its challenges. Among these was the pricing model.** Until the 1970s, the agricultural pricing model ended up transferring much of the agricultural income to Government revenue (through taxes), urban consumers (through lower food prices) or industry (through cheap raw material and other inputs). These conditions nearly killed the sector; agriculture taxation was inversely related to growth during this period and there was a decrease in total factor productivity.

**The key changes to transform the sector began with the Economic Rehabilitation Projects and included reform in cocoa and non-cocoa value chains.** The ERP changed the pricing policy, reduced tariffs and reduced input prices, among other interventions. The agriculture-specific interventions can be categorised as being for cocoa and for non-cocoa products:

- Cocoa: increased use of fertiliser, promotion of hybrid varieties, increase in farmer producer prices, improved quality control, improved and more efficient export management, Ghana's strong credit internationally, the establishment and restructuring of the Cocoa Marketing Board, which is involved in each stage of the value chain
- Non-cocoa: the Government launched four mutually complimentary programmes for the non-cocoa sector in recognition of the limited attention the sector had historically received.
    - Agricultural mechanisation services centres (increased mechanised area per farmer to 3.2 ha by 2010)
    - Fertiliser subsidy programme (increased average fertiliser use by 15% in 2008-19)
    - Block farm programme (increased farmer incomes by 17%, rice and soyabean productivity by 100%)
    - National Food Buffer Stock Company (decreased price volatility for major crops)

[114] Focus Economics, IFPRI & IIID, Global Food Policy Report, World Bank, Institute of Development Studies, Feed the Future & IFDC, FAO

**The result of these efforts was the increase in land productivity (grew ~160% in 1990-2010) and labour productivity (doubled).** In the case of cocoa specifically, the increase in farmers' share of price increased production significantly.

*Indonesia*

**Indonesia is a large Southeast Asian country with a population of >267 million with a diverse agricultural sector that remains critical to the overall health of the economy, despite declining importance**. Agriculture constitutes 13.5% of GDP and 33% of employment, with the main crops being oil palm fruit (31% of total harvested area in 2019), paddy rice (22.5%) and maize (11.9%). Rubber, coconuts and cocoa beans are also important agricultural products. Chickens, ducks, goats and sheep are the main livestock.

**One of the key concerns of Indonesia's agricultural sector has been maintaining food self-sufficiency.** While self-sufficiency has been a major policy goal for some time, previous attempts had varying degrees of success. In 2015, the Strategic Plan of the Ministry of Agriculture was instituted in order to reinforce those efforts. The Plan focused on five key staples: rice, maize, soyabean, sugar, and beef, with measures introduced for a few other commodities.

**The key initiatives introduced by the Government revolve around rice, palm fruit, finance and ICT in agriculture.**

- Rice: significant input intensification (7000 varieties have been identified and conserved since the 1970s) and R&D, increased support for fertiliser use through extension and input delivery programmes, the introduction of ecological technologies (pest management), expansion of irrigation (around 84% of rice is grown under cultivation) and scale-up of mechanisation
- Palm fruit: introduction of the Nucleus Estate and Smallholder programme (a type of contract farming) to include smallholders in palm fruit production, palm plantation revitalisation, removal of tax on exports to incentivise production.
- Finance: the establishment of the Bank Rakyat Indonesia specifically to provide credit to rice farmers. BRI then evolved to provide rural microfinance and consequently into a commercial bank.
- ICT: introduced the Farmer Empowerment through Agricultural Technology and Information (FEATI) project to support the achievement of having 1 extension worker per agricultural village. Tools provide technical information, pricing information, advice on agriculture commodities, variety selection, weather information, plant diseases, and fertiliser dosage, among others.
- Other: the Government focused its financing on the agricultural sector (even during times of limited incentives) and input subsidies

**As a result of these efforts, self-sufficiency was achieved in 2019 for rice, maize, shallots and chilies**. Rice especially showed significant growth in productivity to achieve the highest yield in Asia. In oil palm fruit, the efforts led to 40% of production done by smallholders.

## B. Overview of flagships across the value chain and the link to the guiding principles

**The guiding principles are reflected in the AMP's flagships, approach and governance**

| | Principle | Flagships | Description |
|---|---|---|---|
|  | **High impact and demand-driven** | **5. Red meat and dairy**<br>**6. Traditional cash and major crops**<br>**8. Commercial activity for priority commodities** | Consider stable demand and future demand potential as a key factor in identifying priority commodities |
| | | **Across flagships** | Prioritise AMP flagships, initiatives, commodities, and regions to focus on highest impact interventions, also considering cost effectiveness |
|  | **Implementation-focused** | **Across flagships** | Design flagships and initiatives in the AMP to be actionable, with clear stakeholder accountability, timelines for implementation, and KPIs to track progress |
|  | **Market-led** | **1. Irrigation** | Partner with private sector to achieve share of irrigation target |
| | | **3. Soil health** | Encourage private sector facilitation of financing of regenerative ag. practices through carbon markets |
| | | **4. Smallholder organisation and SMEs** | Encourage private sector to play a critical role to provide access to inputs and to markets for smallholders, and to support incubation of new agri-SMEs |
| | | **5. Red meat and dairy offtake** | Facilitate red meat and dairy offtake agreements in community small ranches with private sector; private sector will supply and specify critical inputs during animal raising |
| | | **7. Mitigate barriers to ag.-business** | Minimise time/cost of starting and operating an ag.-business, including export, and attract new private capital through PPP agreements |
| | | **8. Commercial activity for priority commodities** | Develop selected commodities through private sector expansion |
| | | **9. Processing** | Focus on large-scale processing activities in agro-processing zones |
| | | **10. Regional and international export** | Develop cold chain and other infrastructure by the private sector and with PPPs |
| | | **13. Access to finance** | Private finance providers will serve smallholders and SMEs to enable the agribusiness ecosystem |

| | Principle | Flagships | Description |
|---|---|---|---|
|  | **Inclusion** | **2. Seed production** | Provide support for young people to become successful seed-entrepreneurs |
| | | **4. Smallholder organisation and SMEs** | Focus on supporting women cooperatives and associations, and maintain dedicated role for women and young people in BBT and agri-SME incubation |
| | | **5. Red meat and dairy offtake** | Emphasise support for women dairy farmers to boost dairy productivity and offtake |
| | | **6. Traditional cash and major crops** | Support young people to enter the cash crops business |
| | | **11. Digitalisation** | Encourage and support young people to play a critical role in the digital transformation |
| | | **12. Extension** | Consider goals for creating a more gender-balanced workforce when hiring additional agents and provide training on specific needs of women smallholders |
| | | **14. Land availability and access** | Support women and young people with accessing titles for their farms |
|  | **Collaborative approach** | **Across flagships** | Develop the AMP through a consultative process involving numerous and diverse stakeholders to identify relevant roles and responsibilities for all type of stakeholders |
|  | **Resilience and sustainability** | **1. Irrigation** | Increase irrigation to limit impact of droughts |
| | | **3. Soil** | Conduct soil mapping and subsequent action plans to place additional land under resilient regenerative agriculture practices |
| | | **13. Access to finance** | Provide insurance services to support farmers for production failure |
| | | **15. Early warning system** | Develop warning system to limit impact of disasters and increased food reserves to mitigate for loss of production |
|  | **Better nutrition** | **4. Smallholder organisation and SMEs** | Focus on organisation of horticulture farmers, given horticulture's high nutritional value |
| | | **5. Red meat and Dairy offtake** | Increase production of milk, which has significant nutritional benefits (critical vitamins and minerals) |
| | | **8. Commercial activity for priority commodities** | Emphasise nutritional value as one of the key criteria used prioritise the commodities (e.g., poultry and aquaculture for boosted protein consumption) |
| | | **5. Red meat and dairy offtake** | Research and innovate to improve the indigenous cattle breed to maximise yield |

| | Principle | Flagships | Description |
|---|---|---|---|
|  | **Based on Tanzania's strengths** | | potential given Tanzania's specific agro-ecological context |
| | | **6. Traditional cash and major crops** | Consider the potential competitive advantage of Tanzania as one of the key factors used to identify the priority commodities |
| | | **7. Mitigate barriers to ag.-business** | Scale the AGCOT model, given proven track record of success using the cluster model, which is specific to Tanzania's regions and business environment |
|  | **Replicates proven models** | **Across flagships** | Design the flagships with close consideration of successful transformations both in Tanzania as well as in other countries |
|  | **Organisational sustainability** | **Across flagships** | Co-create AMP with diverse stakeholders, set-up and capacitate the ATO for immediate implementation, and identify clear accountabilities for the flagships to ensure organisational sustainability |

*Figure 95: Illustration of the linkage between guiding principles and the design of the AMP*

# Flagships address key challenges faced by smallholders

Livestock | Fishery | Crops | Cross cutting

| | Land | Financing | Inputs | Knowledge & practices | Disasters | Market access |
|---|---|---|---|---|---|---|
| **Challenges & pain points of smallholders** | • Difficult to access land and obtain title deeds<br>• Land conflicts between livestock & crops<br>• Low soil health | • Smallholders largely excluded from the financial system | • Challenge to access quality inputs, e.g., feed, fingerlings, fertilizers, vaccines, mechanization<br>• Insufficient high quality and resilient seeds<br>• Lack of irrigation infrastructure<br>• Insufficient availability/ uptake of improved animal breeds/ AI<br>• Limited access to quality extension services | • Limited dissemination of best practices<br>• Limited knowledge on regenerative farming<br>• Inadequate post-harvest practices aquaculture | • Lack of early warning systems<br>• Limited emergency policies<br>• Limited resilient farming practices | • Limited access to aggregators<br>• Limited access to market intelligence<br>• Lack of infrastructure<br>• Limited processing |
| **Flagships support** | 3 Soil<br>Restore soil health to increase yields and quality of grazing areas | 4 Smallholder organization<br>Facilitate finance to groups given risk-sharing amongst many | 1 Irrigation<br>Develop Infrastructure for smallholder irrigation | 3 Soil<br>Map soil to develop tailored practices and input guidelines | 3 Soil<br>Disseminate regenerative knowledge, and climate smart practices across crops, livestock and aquaculture | 1 Irrigation<br>Increase drought resilience | 4 Smallholder organization<br>Organize farmers which can then access markets through aggregators |
| | 4 Smallholder organization<br>Support smallholders' access to land through block farming schemes | 13 Finance<br>Increase access to finance through alternative physical distribution network, guarantees, insurance, etc. | 2 Seeds<br>Enhance seed systems to increase production and distribution | 5 Red meat and dairy offtake<br>Improve access to quality feed, breeds, & vaccines | 6 Crop development<br>Develop and share crop specific knowledge through boards | 3 Soil<br>Increase soil resilience and the use of resilient practices | 9 Processing<br>Improve storage and market linkages to processing zones and ensure ease of processing |
| | 11 Digitalization<br>Link area under cultivation and crop cultivated to farmer profiles | 14 Land<br>Facilitate land ownership which can serve as collateral to access financing | 4 Smallholder organization<br>Organize farmers so that they can easily be served by dedicated SMEs | 8 Commercial activities<br>Increase production of feed and other inputs, incl. fingerlings | 11 Digitalization<br>Support decision making with data and targeted interventions | 5 Red meat and dairy offtake<br>Increase the usage of climate-resilient tools (e.g., supplementary fodder) | 10 Export infrastructure<br>Develop cold chain facilities |
| | 14 Land<br>Facilitate access to land and reduce land conflict through land management systems | | 6 Crop development<br>Support access to inputs through Boards | 12 Extension services<br>Increase productivity by supporting the adoption and usage of appropriate inputs (e.g., seeds, vaccines/ AI | 12 Extension services<br>Deliver latest best practices in a timely manner | 15 Early warning<br>Ensure adequate responses to disasters through systems, policies and food reserves | 11 Digitalization<br>Ensure access to real time market intelligence and off-takers |
| | | | 11 Digitalization<br>Enable distribution of e-vouchers for inputs and information on input providers | | | | |

# Flagships address key challenges faced by medium and large commercial players

Livestock | Fishery | Crops | Cross cutting

| | Land | Operations | Financing | Inputs | Processing | Export |
|---|---|---|---|---|---|---|
| **Challenges & pain points of commercial players** | • Difficult to access large areas of land<br>• Limited land mapping to assess suitability and usage inputs | • Many constraints to run a business<br>• Difficulties to connect with relevant stakeholders<br>• Taxes and tariffs limiting expansion | • Limited access to credit<br>• Limited international investments | • Challenge to access inputs from small-holders<br>• Difficult to supply smallholders in certain areas<br>• Specific inputs lacking to scale priority commodities | • Limited infrastructure for large scale processing | • Limited export infrastructure<br>• Lack of export standards<br>• Limited cold chain infra-structure |
| **Flagships support** | 3 Soil<br>Improve soil health data to enable informed investments in the country | 7 Mitigate barriers to ag-business<br>Streamline processes/ improved coordination between private sector and Ministries | 8 Commercial activities<br>Develop priority commodities through dedicated government support | 1 Irrigation<br>Encourage private sector investment in irrigation through dedicated policies and feasibility studies | 9 Processing<br>Develop agro-processing zones and dedicated processing activities for certain commodities | 6 Crop development<br>Increase quality standards and quantity of export crops |
| | 4 Smallholder organization<br>Increase access to land for commercial players through block farming | 8 Commercial activities<br>Reduce taxes and tariffs on elements essential to scale priority commodities (incl. soya, poultry, aquaculture, wheat) | 13 Finance<br>Increase access to finance through guarantees, insurance and technical assistance | 2 Seeds<br>Facilitate private sector players to invest in seed production through coordination and policies | | 7 Mitigate barriers to ag-business<br>Overhaul export requirements in line with int'l best practices |
| | 11 Digitalization<br>Link area under cultivation and crop cultivated to farmer profiles | 14 Land<br>Simplify process to access and utilize land for investments | | 4 Smallholder organization<br>Organize farmers to easily be served by dedicated SMEs (and supplied by commercial players) | | 9 Processing<br>Develop agro-processing zones and polices and tariffs conducive to ensure ease of processing |
| | 14 Land<br>Facilitate access to land through land management systems and creation of land bank | | | 8 Commercial activities<br>Lower cost of feed and other inputs | | 10 Export infrastructure<br>Facilitate regional and international export with increased cold chain infrastructure and export gateways and streamlined processes |

## C. Detailed flagships

2030 Ambition  X Flagship

### Enhance productivity of key commodities by >50% in a sustainable and resilient way

1. **Expand area under irrigation to 1.2Mha** and build irrigators organizations capacity with a focus on seed production and priority commodities
2. **Quintuple seed** production by boosting private production and improving efficiency of government organizations
3. **Improve soil health by developing agriculture management plans across 3Mha and by transitioning 3Mha to climate smart agriculture** though on-farm soil mapping to develop action plans and national soil degradation assessments to develop climate smart practices

### Increase smallholder income by >20%

4. **Scale upstream and downstream market linkages for 2M+ smallholders to access quality inputs, markets, and other services,** by formalizing and scaling smallholder groups across 1.7M agriculture entities (e.g., farms/ponds), and incubating farmer-facing SMEs through BBT and third-party accelerators
5. **Improve red meat & dairy farmers' access to market by promoting viable offtake volumes and high product quality,** through improved breeding programs, scaled pasture production, mass vaccination campaigns, expanded livestock traceability, and establishment of new MCCs and small ranches
6. **Develop traditional cash crops and major food crops through board-led excellence** in orchestrating various actors and resources across priority value chains to create a conducive environment for smallholders to access better markets and thrive

### Promote the development of >1000 medium and large-scale commercial entities across the value chain

7. **IImprove profitability and operational effectiveness of agriculture businesses in TZ,** via removal of agriculture-specific regulatory barriers (incl. export barriers), and by scaling (S)AGCOT from 1 to 4 corridors as an implementation mechanism for policy changes
8. **Accelerate the development of commercial activities of priority commodities** - wheat, soya beans, poultry, aquaculture and fertilizer - by unlocking prerequisites to increase investment from private sector
9. **Increase specific commodities processing by 10x** by developing warehouses and market linkages, building one agro-industrial processing cluster and building processing infrastructure for sisal, cashew nuts, poultry, fisheries, dairy and packaging

### Facilitate export to reach 6 Bn$ export

10. **Increase regional and international export to $6Bn** by enhancing cold chain, airport and seaport capacity and efficiency, including processes

### Create supportive enabling environment

11. **Digitally register 9.9 Mn farmers & stakeholders** and digitalize agriculture ecosystem to enable targeted farmer support, informed decision making, etc.
12. **Boost coverage of extension services by ~2X, and improve quality of services** through the establishment of an operational supports fund, hiring of new extension agents, scaling of digital extension services, and establishment of required refresher programs
13. **Provide access to financing to 1.7 Mn beneficiaries in groups and 30k SMEs** through adapted products, increased distribution networks and risk-sharing
14. **Sustainably unlock 1.5Mha for commercial agriculture and 1.2Mha land ownership for smallholders** including women and youth through an agricultural land database
15. **Enhance Food Security** through strengthened Early Warning Systems, Strategic Food and Feed Reserves and emergency response, as well as fish Monitoring, Control, and Surveillance

### Commodities

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Cotton | Cashew | Sisal | Fruits (focus on avocado and banana) | Coffee | Maize | Paddy | Spices (focus on cloves) | Vegetables (focus on cassava and potatoes) |
| Sorghum | Wheat | Sunflower | Sesame | Soyabeans | Kidney beans (and other pulses) | Aquaculture | Poultry | Red meat |
| Dairy | Fodder | | | | | | | |

## Flagship 1: Expand area under irrigation to 1.2Mha and build irrigator's organisations capacity with a focus on seed production and priority commodities

### Context:

Tanzania's agricultural sector faces challenges due to its heavy reliance on rain-fed agriculture, with only a small fraction of its arable land currently under irrigation. Presently, Government-led irrigation covers merely 0.7 million hectares out of a potential 29.4 million hectares, predominantly utilising traditional, inefficient methods such as manually dug canals and furrows. These methods exhibit low water efficiency, reliability, and entail high maintenance costs. Despite some improvements in irrigation infrastructure, notably concrete-lined canals, many systems remain functional only during rainy seasons, exacerbating the dependence on erratic rainfall patterns.

### Challenges hindering irrigation expansion:

Several factors impede the expansion of irrigation in Tanzania, limiting both Government and private sector investments. Chief among these challenges is the limited Government budget allocated to finance large-scale irrigation infrastructure projects, which are capital-intensive and entail lengthy payback periods. Additionally, the absence of a clear baseline assessment of the current state of irrigation—encompassing both Government-led and private-led initiatives—hampers effective progress tracking, resource planning, and prioritisation of critical rehabilitation and expansion projects. Furthermore, the absence of a robust Public-Private Partnership framework constrains the leveraging of private investment and participation in the development and operation of irrigation schemes.

### Barriers to private sector investment:

The private sector faces additional hurdles in investing in irrigation, including ambiguity surrounding water use rights and inconsistency in enforcement, inadequate institutional capacity for implementing and maintaining irrigation systems, and insufficient farmer capacity to operate and manage irrigation infrastructure. Moreover, sustainable funding sources for the maintenance and operation of existing systems remain elusive, further deterring private sector involvement. The lack of clarity on water rights and enforcement mechanisms presents a further deterrent to private sector investment, compounding the challenges faced in expanding irrigation coverage in Tanzania.

### Importance of irrigation and sustainable development:

Despite these challenges, the imperative to expand irrigation in Tanzania is paramount. Increasing irrigation coverage holds the potential to boost agricultural productivity, enhance resilience to climate shocks, ensure food security, and improve the income of smallholder farmers. Prioritising irrigation for specific purposes, such as seed production, can further amplify its impact on agricultural development. High-quality seeds are crucial for enhancing crop yields and ensuring food security. By prioritising irrigation for seed production, Tanzania can strengthen its agricultural value chain and foster sustainable agricultural development. However, any expansion in irrigation must prioritise sustainability, focusing on investments in sustainable water management practices and technologies to foster a resilient agricultural sector in Tanzania. Addressing the existing challenges and fostering partnerships between the

Government and the private sector are crucial steps toward realising the full potential of irrigation and ensuring the sustainable development of Tanzania's agriculture.

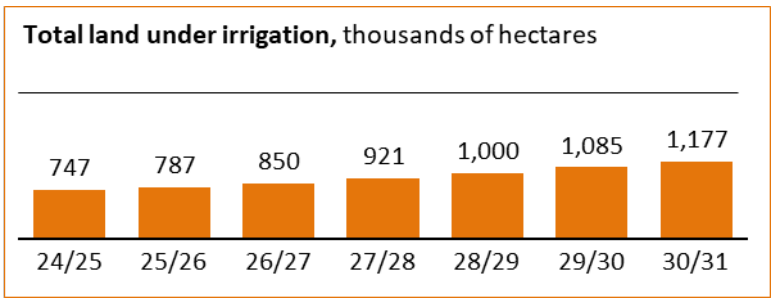
**Objective and KPIs:**

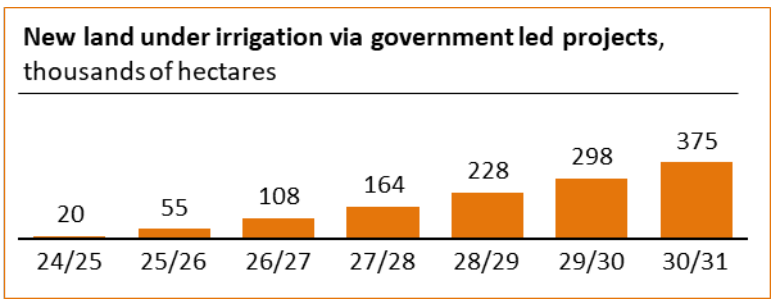
This flagship aims to significantly enhance agricultural productivity and climate resilience in Tanzania by increasing the area under irrigation to 1.2 million hectares. To achieve this goal, both Government-led and private sector initiatives will play a pivotal role. Government-led projects are slated to add 375 kha of new land under irrigation, while the private sector will contribute an additional 75 kha. Additionally, 35 kha of traditional irrigation systems will undergo rehabilitation, and 13,000 boreholes will be installed, covering an area of 208 kha to ensure reliable access to groundwater for irrigation purposes.

In parallel, this flagship seeks to unlock and boost private sector investment in irrigation, creating an enabling environment through policy reforms and regulatory frameworks. Through targeted capacity building programmes, local communities and smallholder farmers will be empowered to engage in irrigation schemes, fostering inclusive and resilient agricultural development. Irrigator's organisations will play a crucial role in the maintenance and operation of irrigation schemes. Investments in irrigation will be prioritised for seed production and other priority commodities, aiming to strengthen the agricultural value chain and enhance the resilience of Tanzania's agricultural sector.

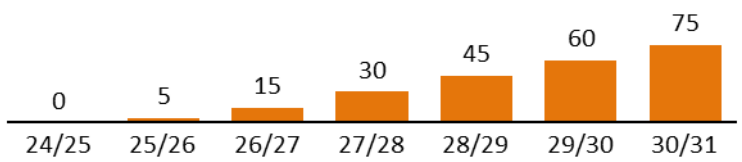
Through a collaborative approach and strategic investments, this flagship aims to unlock the full potential of irrigation as a catalyst for sustainable agricultural development and economic growth in Tanzania, leveraging private sector resources and expertise to complement Government efforts.

The following are the key performance indicators (KPIs) and their yearly breakdowns until 2030/31 to track the progress and impact of this flagship:

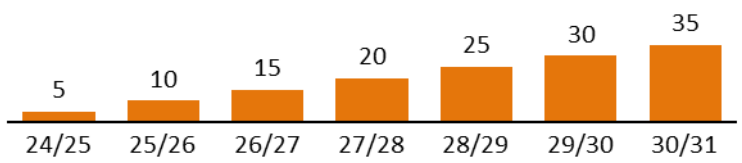


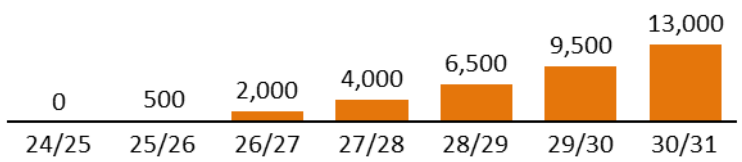
**New land under irrigation via private sector led projects,** thousands of hectares



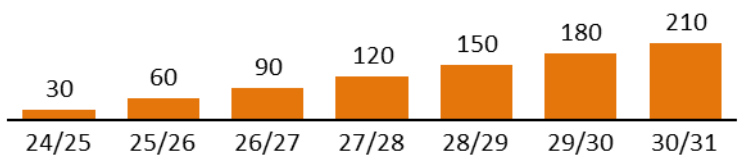

**Rehabilitation of traditional irrigation systems**, thousands of hectares



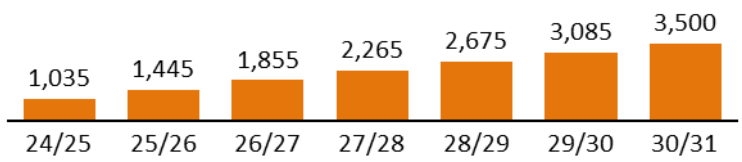

**Boreholes installed covering 208Kha,** # of borehole wells




**Personnel trained and capacitated**, # of people




**Irrigator's organization (IO's) registered,** # of IO's



**Initiatives:**

| | |
|---|---|
| **A. Government-led increase in area under irrigation by 375kHa** | **A.1. Conduct a comprehensive baseline study to assess the current irrigation situation in Tanzania, informing the prioritisation of implementation for new and rehabilitation projects.** Given the lack of accurate data on the location and condition of existing irrigation systems, it is imperative to determine their functionality. Discrepancies between reported and actual irrigated areas underscore the need for accurate data collection. Moreover, the growth and contribution of the private sector in irrigation remains largely unknown and untracked. Through this study, resource allocation can be optimised, ensuring effective decision-making between building new systems, and expanding or rehabilitating existing ones based on data-driven insights. |
| | **A.2. Conduct comprehensive feasibility studies to establish a robust pipeline of projects poised for implementation by both Government and private sector entities.** These feasibility studies encompass a range of critical elements, including agronomic and soil testing to ascertain land suitability for agriculture, topographic surveys to understand land layout, hydrological surveys, water resource analysis to assess water availability, economic analysis to gauge the financial viability of each project, and social studies to ensure local community buy-in and support from relevant authorities. Surveys will encompass projects of varying scales, including small, medium, and large schemes, boreholes, lake zone projects, as well as expansion and rehabilitation initiatives. The overarching objective is to develop a pipeline of projects that are investable and ready for implementation by the National Irrigation Commission, private sector partners, farmer groups, or individual farmers, with funding sourced from a variety of channels. |
| | **A.3. Implement new Government-led irrigation schemes across Tanzania to expand the irrigated area sustainably by 110kHa from various sources**, including water basins such as the Pangani and Rufiji basins. This initiative encompasses the construction of large, medium, and small-scale irrigation schemes utilising diverse water sources. These may include the construction of weirs to divert water directly from rivers, pump irrigation systems drawing from river sources, and the establishment of storage facilities to reserve floodwater during rainy seasons. Priority is placed on the development of water storage facilities such as dams and ponds to ensure a year-round water supply, particularly in arid and semi-arid regions of Tanzania mainland. By leveraging water resources from multiple basins and employing a range of irrigation techniques, this initiative aims to expand and sustainably manage the irrigated area, thereby |

| | |
|---|---|
| | enhancing agricultural productivity and food security in the country. |
| | **A.4. Expand the area under irrigation within existing systems by scaling up water distribution to cover an additional 35kHa of new irrigated area.** This effort entails a comprehensive assessment of water availability in existing schemes to ensure sufficient capacity for expansion. Moreover, measures to enhance water efficiency will be implemented to optimise water management practices, consequently expanding the area under irrigation. This expansion encompasses both increasing water storage capacity and expanding water distribution to cover new areas. Typically, the cost of expansion is approximately half that of establishing a new scheme, contingent upon adequate water availability to meet the expanded needs. Through these measures, the initiative seeks to maximise the utilisation of existing irrigation infrastructure, enhance water efficiency, and extend irrigation coverage to previously underserved areas, thereby bolstering agricultural productivity and resilience in Tanzania. |
| | **A.5. Rehabilitate existing traditional irrigation systems to ensure their proper functioning, targeting 35kHa currently under irrigation.** While this initiative may not directly result in an increase in the area under irrigation, it is crucial to sustainably operate existing systems, thereby supporting established cultivation activities. Rehabilitation efforts typically involve improving both water storage and distribution infrastructure to address existing deficiencies. In certain cases, modernising existing infrastructure and upgrading it to improved systems with higher water efficiency may lead to some expansion in the area under irrigation. By enhancing the functionality and efficiency of traditional irrigation systems, this initiative aims to prolong their lifespan, improve agricultural productivity, and contribute to the overall sustainability of irrigation practices in Tanzania. |
| | **A.6. Roll out 13,000 bore holes across Tanzania to add 208kHa of new irrigated area, with a targeted focus on specific regions and value chains.** This endeavour involves drilling wells and installing drip irrigation infrastructure, along with water tanks to serve farming blocks of up to 16 hectares, allocating one hectare per farmer. The implementation of this project spans across all 184 districts in Tanzania, with prioritisation based on various factors, including the need for groundwater use in areas where surface water resources are limited, particularly in semi-arid regions. Groundwater resource availability and technical viability will be key considerations, alongside fostering engagement with local Government and communities. By leveraging groundwater resources and deploying modern irrigation infrastructure, this initiative seeks to expand irrigated |

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| | areas, enhance crop production, and promote sustainable agriculture across Tanzania. |
| | **A.7. Develop and implement a Lake Zone Irrigation programme, with the objective of irrigating up to 22kHa of land surrounding Lake Victoria.** This initiative includes the establishment of small-scale irrigation schemes that will source water from Lake Victoria and pump it to serve smallholder farms located more than 300 metres away from the lake shore. To facilitate this initiative, detailed feasibility studies will be conducted, followed by consultations with the Nile Basin Initiative (NBI) to ensure regional cooperation and equitable use of water resources from the Nile Basin. By harnessing water from Lake Victoria and deploying efficient irrigation infrastructure, this initiative aims to expand irrigated areas, support smallholder farmers, and promote sustainable agriculture in the Lake Zone region of Tanzania. |
| **B. Unlock private sector investment via PPPs and private commercial/equity financing** | **B.1. Conduct inter-ministry reviews of current water use policies to clarify water rights, simplify the process to obtain water permits, and communicate progress to the public.** This initiative entails collaboration between various ministries, local Governments, and relevant authorities associated with the sustainable use of natural water resources. Its objective is to promote direct private sector investment in large commercial farms or investments by private entrepreneurs who possess their own farming land, financing, and are well-positioned to develop private irrigation projects independently, contingent upon a conducive and enabling policy environment. Additionally, this initiative includes the identification, information sharing, and promotion of areas with high potential for private sector investment in irrigation. Through this initiative, Tanzania aims to streamline water use policies, facilitate private sector investment, and harness the potential of its natural water resources to drive sustainable agricultural development. |
| | **B.2. Boost investment in irrigation through a Public-Private Partnership (PPP) framework by prioritising projects, customising PPP agreements, and tendering processes, and engaging with the private sector for investment.** This initiative involves the identification and promotion of projects with high potential to attract private sector investment and have a significant economic impact on the agricultural sector. Given the necessity for alternative sources of investments to finance large Government-led irrigation projects, the development of an irrigation-specific PPP framework becomes essential. Collaborating with private sector stakeholders, this framework will be tailored to address concerns and meet the requirements of all parties involved, ultimately unlocking substantial investment from the private sector. Through this initiative, Tanzania aims to create |

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| | a conducive environment for private sector participation in irrigation projects, fostering collaboration and driving sustainable agricultural development. |
| **C. Enhance institutional capacity to support growth, maintenance of irrigation systems** | **C.1. Enhance the capacity of the National Irrigation Commission and irrigation officers at regional and district levels through targeted training and provision of implementation tools.** This includes comprehensive training programmes covering maintenance and management of irrigation systems, as well as technical feasibility studies, economic assessments, and community engagement. Moreover, the initiative entails the recruitment and training of additional personnel to augment the commission's support for Government-led projects across Tanzania. By bolstering expertise and providing essential tools, this initiative aims to ensure effective operation, maintenance, and expansion of irrigation systems nationwide, thereby advancing sustainable agricultural development in the country. |
| | **C.2. Further develop the national irrigation fund to support the maintenance of existing systems and facilitate the creation of Irrigators Organisations (IOs) for the operation, maintenance, and proper use of new systems.** This initiative encompasses several key components, including capacity building for farmers in irrigation schemes on the operation, management, and maintenance of irrigation infrastructure. Additionally, efforts will be made to engage communities and organise farmer groups into Irrigators Organisations (IOs) to ensure collective responsibility for irrigation system upkeep. Furthermore, awareness campaigns will be conducted to educate farmers on compliance with the National Irrigation Act No. 4(2013) and the importance of contributing to irrigation development through Irrigation Service Fees. By strengthening the national irrigation fund and fostering the establishment of IOs, this initiative aims to ensure the financial sustainability and effective management of irrigation projects, thereby enhancing agricultural productivity and livelihoods in Tanzania. |

## Costing:

| | | Government cost, M$ | | | | | | | Private sector cost, M$ | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Component** | **Initiative** | **24/25** | **25/26** | **26/27** | **27/28** | **28/29** | **29/30** | **30/31** | **24/25** | **25/26** | **26/27** | **27/28** | **28/29** | **29/30** | **30/31** |
| **A. Government-led increase in area under irrigation by 375kHa** | **A.1. Conduct a comprehensive baseline study** | 1.5 | 1.5 | | | | | | | | | | | | |
| | **A.2. Conduct comprehensive feasibility studies** | 32 | 20 | 20 | 20 | 20 | 12 | 12 | | | | | | | |
| | **A.3. Implement new government-led irrigation schemes** | 150 | 200 | 200 | 150 | 150 | 125 | 125 | | | | | | | |
| | **A.4. Expand the area under irrigation within existing systems** | 20 | 20 | 20 | 20 | 20 | 20 | 20 | | | | | | | |
| | **A.5. Rehabilitate existing traditional irrigation systems** | 20 | 20 | 20 | 20 | 20 | 20 | 20 | | | | | | | |
| | **A.6. Roll out 13,000 bore holes across Tanzania** | | 22.56 | 67.68 | 90.24 | 112.8 | 135.36 | 157.92 | | | | | | | |
| | **A.7. Develop and implement a Lake Zone Irrigation Programme** | | 14 | 28 | 28 | 28 | 28 | 28 | | | | | | | |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **B. Unlock private sector investment via PPPs and private commercial /equity financing** | **B.1. Conduct inter-ministry reviews of current water use policies** | 0.2 | 0.2 | 0.2 | | | | | | | | | | | |
| | **B.2. Boost investment in irrigation through a Public-Private Partnership (PPP)** | 0.2 | 0.2 | 0.2 | | | | | | 50 | 100 | 150 | 150 | 150 | 150 |
| **C. Enhance institutional capacity to support growth, maintenance of irrigation systems** | **C.1. Enhance the capacity of the National Irrigation Commission** | 0.1 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | | | | | | | |
| | **C.2. Further develop the national irrigation fund and Irrigators Organisations (IOs)** | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | | | | | | | |
| **TOTAL** | | **225** | **299** | **257** | **329** | **352** | **341** | **364** | | **50** | **100** | **150** | **150** | **150** | **150** |

**Risk and mitigations**

| Risk | Mitigation |
|---|---|
| Inadequate government budget | **Prioritise expansion of land under irrigation with most cost-effective methods in terms of cost/ha of land irrigated.** These would imply a focus on more cost-effective methods such as boreholes and lake zone irrigation. Additionally the government could also increase its focus in getting increased private sector financing or develop co-investment schemes with stallholders'' organisations. |
| Insufficiently skilled` human resources | **Ensure proper resource planning to build necessary capacity.** Invest in developing and attracting the human capital required to successfully drive the increase in irrigation. In doing so, it is critical to focus on key skills required across the value chain from feasibility studies to implementation. |
| Operation and maintenance of irrigation infrastructure | **Use national irrigation fund and irrigators organisations to support in the operation and maintenance costs.** Setting up sustainable models is critical to ensure that the infrastructure that is being built includes reflections on operations and maintenance from the get-go. This includes working together with local communities and irrigators organisations. |

**Evolution beyond 2030**

- Increase the expansion of borehole and lake zone-based irrigation in a sustainable way. These two methods are particularly relevant as they are cost-effective and allow for smaller projects tailored to the needs of the smallholders.
- Beyond 2030, the Government should aim for a significant increase in private sector funding to develop the irrigation in the country. This will be fuelled by positive use cases showcased by the government in the coming years as well as through the strengthening of PPPs.

## Flagship 2: Quintuple seed production by boosting private production and improving efficiency of government organisations

### Context

In Tanzania, the seed sector plays a pivotal role in agricultural productivity and food security, yet its current output falls short of meeting the nation's needs. Currently, the country produces only about a quarter of its effective seed demand and a mere 13% of its potential requirements. Certified seeds, crucial for enhancing yields and resilience to pests, diseases, and climate variability, are particularly scarce. For instance, in cereals alone, the utilisation of certified seeds could potentially elevate current yields from 1.2 MT/ha to global levels of 4-5 MT/ha, provided other agricultural practices are optimized. Fulfilling this potential is imperative for Tanzania's ambition to emerge as a significant global food contributor.

**Public and Private Stakeholders in the Seed sector**

Within the seed sector, stakeholders encompass both public and private entities. Public institutions such as the Tanzania Research Institute (TARI) and the Agriculture Seed Agency (ASA) are deeply involved in every aspect of the seed chain, from genetic resource management and breeding to production and marketing. However, despite their mandated roles, both TARI and ASA often deviate from their responsibilities. Political pressures frequently compel them to act reactively, rather than proactively planning for seed demand and coordinating efforts to prevent shortages. This lack of forward planning exacerbates the challenges faced by the sector. Working alongside these institutions is the Tanzania Official Seed Certification Institute (TOSCI), a seed regulatory authority ensuring quality verification and certification of all seeds produced or imported into Tanzania. However, the burgeoning demand for certified seeds also underscores the importance of scaling up TOSCI's capacity to prevent it from becoming a bottleneck in the sector's development.

Conversely, private seed companies primarily focus on producing and marketing certified seeds, particularly modern maize varieties. Other seeds are generally produced by individual farmers or farming communities through contract certified seed production or under the Quality Declared Seed (QDS) programme. The majority of other seeds utilized in the country are either produced through informal seed production methods or simply recycled by farmers. Overall, private sector engagement remains constrained by inconsistent government policies and limited access to essential resources like land, financing, and technology. Despite these challenges, the bulk of certified seeds available, approximately 83% (~61kMT), are currently supplied by private producers, with only a fraction (~3kMT) being contributed by ASA and a portion being imported (~8kMT).

**Seed sector challenges**

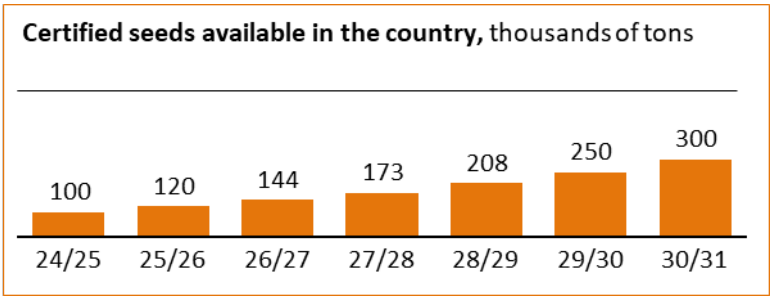
Several challenges impede the scaling up of seed production in Tanzania. Chief among them is the lack of coordination among public and private stakeholders, hindering effective planning and resource allocation for sectoral development. Moreover, the private sector's reluctance to engage in seed production stems from policy uncertainties and resource access issues. Meanwhile, government-led institutions like TARI and ASA face productivity hurdles due to organisational inefficiencies, inadequate institutional capacity, and limited irrigation infrastructure. TARI's productivity stands at a meagre 0.3 MT/ha, while ASA fares slightly better at 0.6 MT/ha, both significantly lower than the private sector's output of 2 to 4 MT/ha. Additionally, irrigation coverage remains scant, with only 600 hectares out of TARI's total 3,600 cultivated land benefiting from irrigation, and ASA's cultivation land under irrigation accounts for only 820 hectares out of the total 6,000 that is currently utilized. Addressing these

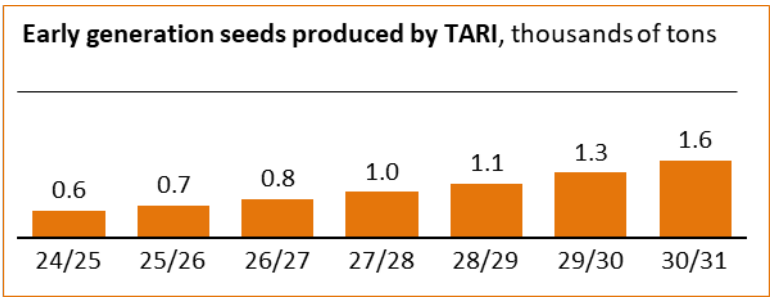
challenges is critical to unlocking Tanzania's capacity to bolster seed production and achieve food security goals.

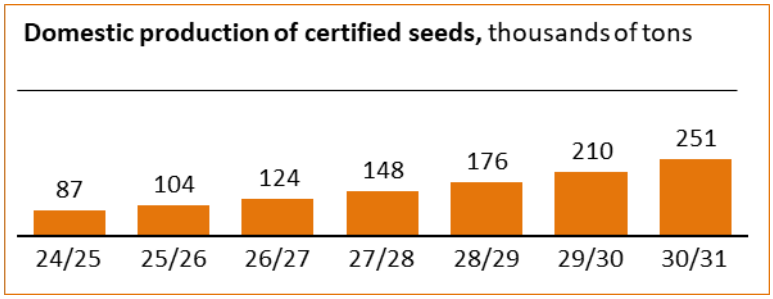
**Objective**

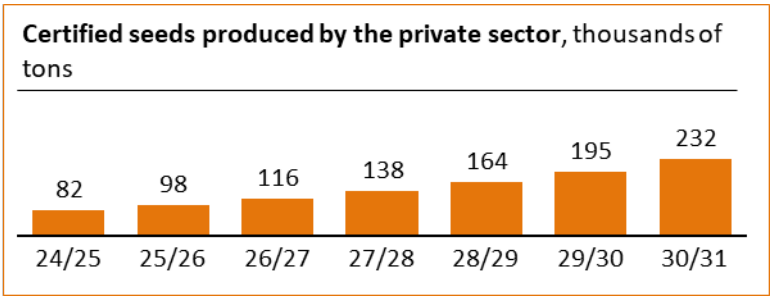
The overarching objective of this flagship is to grow Tanzania's seed sector and enhance the availability and utilisation of certified seeds by smallholders by 2030/31. Ultimately, this flagship aims to boost agricultural productivity and resilience to disease, pests, and climate change by empowering smallholder farmers with high-quality seeds. To achieve this objective, a series of ambitious targets have been set: increasing the availability of certified seeds in the country to 300k metric tons, producing 1.6k metric tons of early generation seeds by TARI, achieving 251k metric tons of domestic production of certified seeds, with 232k metric tons produced by the private sector and 19k metric tons by ASA. Additionally, ensuring that 130k hectares of land are available for seed production will be crucial in meeting these targets and driving the growth of the seed sector.

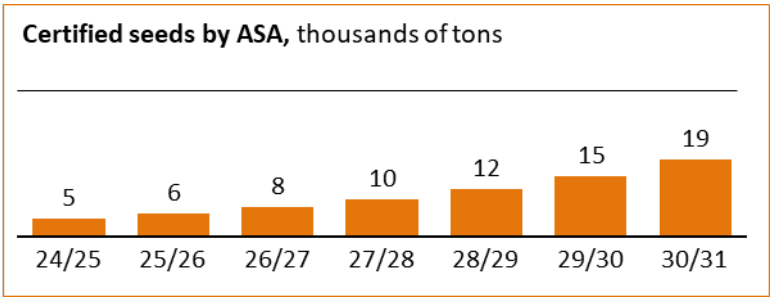
The following are the key performance indicators (KPIs) and their yearly breakdowns until 2030/31 to track the progress and impact of this flagship:

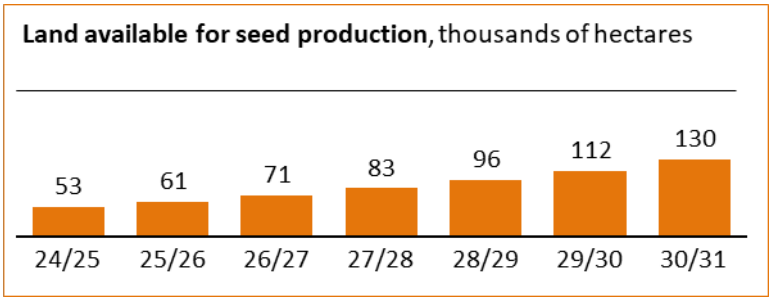





**Initiatives:**

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| **A. Boost TARI's capacity to breed new crop varieties and produce high-quality early generation seeds** | **A.1 - Increase land available and utilized for breeding new crop varieties and production of early generation.** Focus on increasing utilisation of land already available by addressing challenges such as land clearing and preparation, investment in property boundaries to protect from encroachment, and providing the right infrastructural facilities to support production. If necessary, additional land that may be necessary due to agroecological requirements of the crop varieties being researched or to satisfy the conditions needed to produce specific varieties of earlier generation seeds. |

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| | **A.2 - Fully Irrigate all land dedicated to breeding of new crop varieties and production of early generation seeds to enable multi-seasonal production across all TARI sites and reduce the dependence on rain-fed irrigation.** This is necessary to increase the productivity of TARI by shifting to year-round production to ensure adequate availability of pre-basic and basic seeds required for the rest of the seed sector to thrive. In areas where research is focused on rain-fed crop varieties, it is also necessary to have irrigation to protect against the uncertainty of weather patterns. |
| | **A.3 - Market led development of 5 new high-potential crop varieties per year via increased funding for Research and Development (R&D) and enhanced research partnerships with other local and international organisations.** Increased funding for R&D is crucial to fuel innovation and accelerate the breeding of new crop varieties by supporting the hiring of skilled researchers, acquisition of advanced laboratory equipment, and facilitation of field trials to expedite the development of new crop varieties tailored to local agroecological conditions and market demands. Forging strategic research partnerships with other local and international organisations is essential to leverage expertise, resources, and knowledge sharing. Collaborating with renowned agricultural research institutions, such as the International Maize and Wheat Improvement Centre (CIMMYT) and the International Institute of Tropical Agriculture (IITA), can provide access to germplasm, breeding techniques, and best practices in seed development. |
| | **A.4 - Boost organisational efficiency of TARI to increase it's productivity, speed of research, and quality of breeder & early generation seeds**. To enhance TARI's organisational efficiency, investments in human capacity and modern tools and infrastructure are essential. By bolstering staff training and recruitment efforts, TARI can cultivate a skilled workforce capable of conducting high-quality research efficiently. Moreover, upgrading laboratory equipment, field facilities, and information management systems can expedite research processes and improve the quality of breeder and early generation seeds. To enhance TARI's efficiency from a management perspective, it's vital to transition from a scientist-centric to an output-oriented institution. This entails restructuring management to include dedicated roles for project management and coordination alongside scientists, ensuring alignment with national priorities. Implementing performance-based incentives and evaluations can drive impactful research, while fostering partnerships with government, private sector, and farmer organisations can enhance relevance and applicability. By adopting this proactive and collaborative management approach, TARI can maximise its |

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| | efficiency, responsiveness, and impact in addressing Tanzania's agricultural challenges. |
| **B. Increase capacity and capability of ASA** | **B.1 - Increase land available and utilized for seed multiplication via ASA for private sector use and investing in it's preparation for ease of cultivation.** This initiative involves allocating more land to ASA as an asset manager for the purpose of leasing to private sector seed producers and investing in its preparation to facilitate ease of cultivation. By expanding the land available to private seed producers, ASA can support the scaling up of commercial seed production for priority crops, thereby increasing the availability of certified seeds in the market. Additionally, ASA can also contract out this land to private seed producers for seeds that are a national priority to meet local consumption but may not be attractive for private sector to produce commercially without support. Investing in the preparation of this land, including clearing, boundary construction, soil preparation, and access roads, will create conducive conditions for efficient cultivation and maximise land productivity. |
| | **B.2 - Increase area under irrigation for seed multiplication to double production by enabling multi-seasonal production of certified seeds.** Expanding the area under irrigation for seed multiplication in Tanzania will not only double production but also attract private sector involvement in cultivating on irrigated ASA land. This initiative aims to enable multi-seasonal production of certified seeds, mitigating the challenges posed by seasonal rainfall variability and fostering a conducive environment for private seed producers to engage in seed multiplication. By providing access to irrigated land, the ASA can incentivize private sector participation, driving increased seed production, improving seed quality, and ultimately enhancing agricultural productivity and food security in the country. |
| | **B3. Increasing ASA land leased to private seed producers by improving leasing terms and negotiating other necessary requirements.** To further stimulate seed multiplication in Tanzania, there's a strategic focus on increasing the amount of ASA land leased to private seed producers. This initiative involves improving leasing terms and negotiating additional necessary requirements to facilitate private sector participation. By enhancing leasing agreements, including terms related to land access, tenure security, and operational flexibility, ASA can attract more private seed producers to utilise its land for seed multiplication. Negotiating other essential requirements, such as access to irrigation, technical support, and market linkages, will |

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| | further incentivize private sector involvement and ensure the successful cultivation of certified seeds. |
| | **B.4 - Develop ASA's institutional capacity and its organisational efficiency to produce, promote and distribute certified seeds to drive adoption and uptake via partnerships and improvement of infrastructure and equipment.** This initiative includes investing in staff training and development to improve capabilities, restructuring management to include dedicated roles for project management and coordination, and implementing performance-based incentives and evaluations to drive organisational efficiency. These measures will ensure alignment with the nation's agricultural priorities and drive impactful results. Additionally, fostering partnerships with other government institutions, private sector entities, NGOs, and farmer organisations is essential in increasing the availability of certified seeds for priority crops. Furthermore, upgrading infrastructure and equipment, such as seed processing facilities, storage warehouses, and farm machinery that can be used by ASA or leased out to support private sector, is also critical to enhance operational capabilities and ensure efficient production and distribution of certified seeds. Embracing these multifaceted approaches will enable ASA to streamline operations, optimize resource allocation, and catalyse the adoption of certified seeds to advance Tanzania's agricultural sector and bolster food security. |

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| **C. Capacitate TOSCI** | **C.1 - Scale up Tanzania Official Seed Certification Institute's (TOSCI) ability to efficiently inspect and certify seed and seed production across all players.** As Tanzania pushes to achieve greater availability and utilisation of certified seeds, it is essential that TOSCI is also able to scale its operations as a seed regulatory authority in ensuring quality verification and certification of all seeds produced or imported into Tanzania. This support in terms of human capacity and other resources (such as satellite offices, vehicles, fuel, etc.) necessary for day-to-day operations and field visits, need to match the growth in demand for certified seeds to ensure TOSCI does not become the bottleneck in the sector's development. |
| **D. Unlocking private sector investment in seed production** | **D.1 - Increase land available by government for private seed production that can either be bought directly or leased for seed production.** To address the critical challenge of limited land access for private seed production in Tanzania, a comprehensive approach is proposed. Firstly, there is a need to identify and protect agricultural land with high potential for seed production, ensuring its availability for private sector investment. This information should be effectively communicated to private sector stakeholders to inform their investment decisions in terms of land purchase or leasing. Furthermore, simplifying the process of leasing government-owned land and providing longer-term leases can facilitate co-investments from the private sector in essential infrastructure such as irrigation and storage facilities |
| | **D.2 - Stakeholder engagement to increase private sector involvement in seed production.** Recognising that the private sector already contributes over 95% of certified seeds in the country, it's imperative for the government to involve them in all planning and decision-making processes. This entails understanding the challenges faced by the private sector, both within the seed sector and in the broader context of ease of doing business. By actively listening to private sector concerns and needs, the government can play a facilitative role in addressing barriers and fostering a conducive environment for sectoral growth. |

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| **E. Coordination across seed sector players** | **E.1 - Co-ordination to prioritise specific crops and their respective improved varieties.** This involves convening private sector producers, crop boards, and relevant government authorities to establish a comprehensive coordinating framework. This framework, potentially overseen by the boards of specific prioritized commodities, will align on national priorities and production targets for key crops by 2030/31. Moreover, it will facilitate the market-led selection of varieties for priority crops and establish yearly requirements to produce certified seeds. Early allocation of production, promotion, and distribution targets to various stakeholders will be aligned, ensuring the availability of necessary resources, and creating key performance metrics to track progress through regular engagement. Additionally, a mechanism will be established through the Agriculture Transformation Office to escalate unresolved challenges to relevant authorities. This coordinated approach aims to streamline decision-making, enhance resource allocation, and accelerate the development and distribution of improved crop varieties in Tanzania. |
| | **E.2 – Clarify role of private sector and government in seed production.** To achieve this, a comprehensive review of mandates and roles of various government institutions involved in the seed sector is imperative. This review will ensure that these institutions prioritise critical elements necessary for the success of all stakeholders and the sector. Specifically, TARI's primary focus should be on researching market-led new crop varieties and producing early generation seeds, rather than engaging in the commercial sale of seeds driven by political pressure or lack of funding support. Similarly, ASA's role needs clarification based on its strengths and other national priorities that may not be fulfilled solely by the private sector. Moreover, ASA and TOSCI must deliberately engage with the private sector to enhance their participation and sustain the sector's growth by creating a stable policy environment and seed sector-specific incentives. This will enable further identification of gaps in the seed sector and opportunities for private sector engagement in furthering seed research, production of early generation seeds, encourage collaborative promotion to drive certified seed utilisation, and other critical elements. |

**Risks and mitigations**

| Risk | Mitigation |
|---|---|
| Political interruptions in seed production | **Set up proper governance for coordination and long-term demand/production planning,** which is crucial for coordinating seed production activities and ensuring long-term demand and production planning. This involves establishing transparent processes, clear regulations, and effective oversight mechanisms to minimize the influence of political factors on seed production. Additionally, developing strategic partnerships with stakeholders, such as seed producers, government agencies, research institutions, and international organizations, can help create resilience against political disruptions. |
| Low uptake of improved seeds | **Government investment in promotion** can address barriers to seed adoption and encourage farmers to adopt improved varieties. This can include conducting awareness campaigns to educate farmers about the benefits of using improved seeds, providing subsidies or financial incentives to make seeds more affordable, and offering extension services to support farmers in the adoption and proper use of improved seeds. Furthermore, engaging with local communities, agricultural cooperatives, and extension workers can help tailor promotion efforts to specific needs and preferences, thereby increasing the uptake of improved seeds. |

**Evolution beyond 2030**

Beyond 2030, the Tanzania seed sector is envisioned to be a robust and dynamic ecosystem characterized by increased utilisation and adoption of certified seeds by smallholders. The sector's growth will be underpinned by enhanced private sector seed production, driving agricultural productivity and resilience to disease, pests, and climate change. With targeted initiatives aimed at boosting seed production and addressing key challenges, the sector is projected to achieve significant milestone to have 300k metric tons of certified seeds available in the country, with 130k hectares of land dedicated to seed production.

To sustain and further grow the seed sector beyond 2030, continued collaboration and innovation will be essential. Initiatives such as increasing land availability and irrigation for seed multiplication, developing organisational efficiency within institutions like TARI and ASA, and clarifying the roles of public and private stakeholders will lay the groundwork for long-term success. Strengthening partnerships with research institutions, leveraging advanced technologies, and enhancing regulatory frameworks will be pivotal in driving continuous improvement and adaptation to evolving agricultural needs and market dynamics. Moreover, scaling up TOSCI's capacity to efficiently inspect and certify seeds, alongside stakeholder engagement to foster private sector involvement, will ensure the sector remains agile and responsive to emerging challenges and opportunities. Through these concerted efforts, Tanzania's seed sector is poised to become a cornerstone of national food security and economic development well into the future.

**Flagship 3: Improve soil health by developing agriculture management plans across 3Mha and by transitioning 3Mha to climate smart agriculture though on-farm soil mapping to develop action plans as well as through national soil degradation assessments to develop climate smart practices**

**Context**

Soil is critical for productivity, resilience, food quality and sustainability for crops, pasture, etc. Current soil maps are inadequate and inaccessible. Most soil maps were last updated before the 2000s and are not readily available for smallholder and for commercial farmers. Many commercial farmers conduct internal studies and smallholders continue to use their land as they deem fit without an understanding of the impact of their practices or which practices are likely to get them the best outcomes.

Soil degradation is also on the rise in Tanzania. Studies referenced by the Vice-Presidents office (VPO) indicate up to 60% of soils in certain areas are degraded and costing the economy billions annually. Key hotspots include Dodoma, Singida, Morogoro, etc. The extent and magnitude are also on the increase. More recently, a study done in the Usangu basin for example indicated that 90% of soils there were degraded, and deficient in key nutrients. Other soil related issues including salination which affects over 3.7 million hectares of cropland, soil acidity, particularly from aluminium or manganese toxicity impacting 4.7 million hectares, and widespread soil erosion. Additionally, sweeping - a consequence of overgrazing and overharvesting - leads to a depletion of organic matter across croplands[115].

Climate smart agricultural practices are a powerful tool to reduce further degradation and restore the health soil ecosystem while minimizing the impact on the environment. In Tanzania, a recent study concluded that the uptake of regenerative agricultural practices is low, another study in certain regions estimated that 10% of farmers practice agroforestry for example. The use of tailored inputs and the practice of climate smart agricultural practices at scale has the potential to boost yields, earn additional income for farmers, improve diets, and most importantly improve soil health.

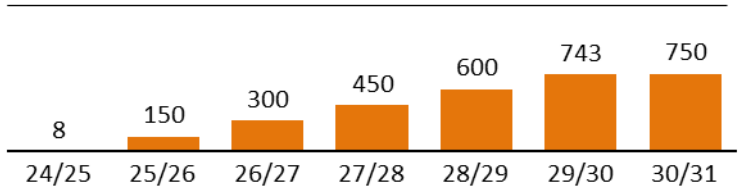
**Objective and KPIs**

The flagship aims to significantly improve the soil ecosystem in the country and make soil health data visible to those who need it. This is done through on-farm soil testing on individual farmer fields to develop recommendations for tailored input use to meet crop and soil needs. Additionally, supporting farmers, pastoralists, etc. to make the transition to climate smart agricultural practices which can build resilience but also lead to restoration. It also seeks to connect famers to the carbon credit market led by carbon aggregators to incentivise the transition through additional income.

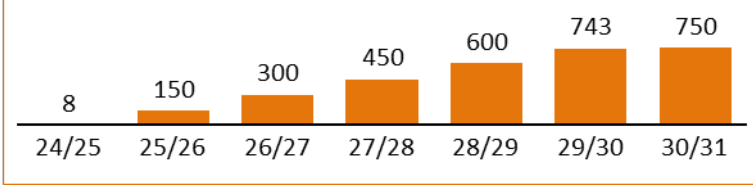
The following are the key performance indicators (KPIs) and their yearly breakdowns until 2030/31 to track the progress and impact of this flagship:

[115] TARI

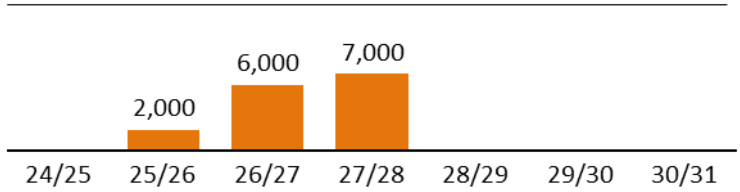
**Yearly on-farm soil testing**, thousands of hectares



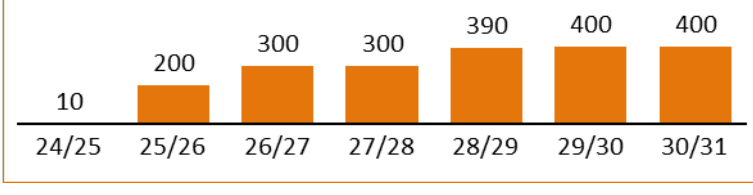

**Yearly development of agricultural land management plan**, thousands of hectares



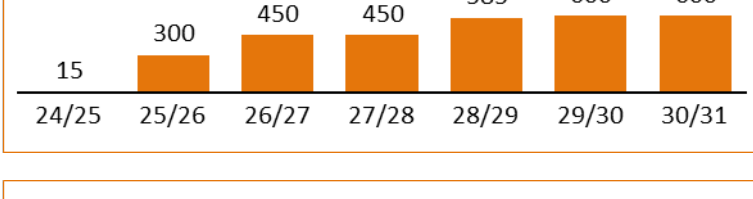

**Yearly degredation assessment,** thousands of hectares



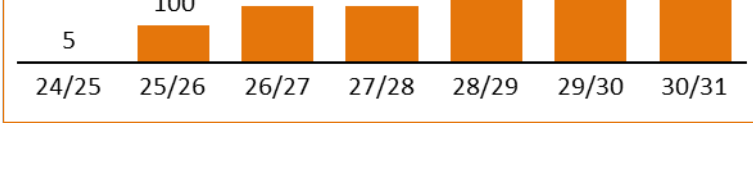

**Yearly increase of area under agroforestry**, thousands of hectares

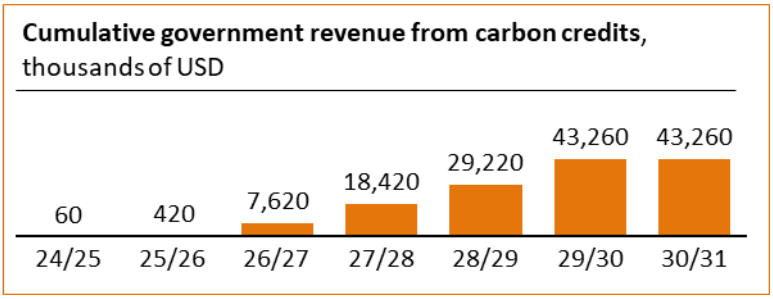



**Yearly sequestration of CO2**, thousands of tons




**Yearly increase of area under other climate smart agricultural practices,** thousands of hectares






**Initiatives**

| | |
|---|---|
| A. **Collect soil data to enable the use of tailored inputs to optimise crop yields** | **A.1 - Identify the data gaps in existing and viable datasets on soil health status**. The aim of this is to avoid the need to reinvent data sets which already exist. This is achieved through the collation and harmonisation of various datasets across stakeholder efforts in the country from the government, private sector and development partner communities. The data is analysed, streamlined and used as the base to develop a national soil management platform, building on existing platforms through which the data and visualisations can be visible to stakeholders. This would also inform locations with variability to prioritise to A.2 which would be at a higher resolution to aid the development of farmer site level tailored recommendations |
| | **A.2 - Pilot on-farm soil testing, and scale on-farm soil sampling led by farmers and extension officers using soil test kits**. The pilots are to be executed in locations with high variability, but also where the relevant infrastructure and structures are in place to enable the development of a proof-of-concept. The extension officers are supported by capacity building, incentives and relevant tools to reach 3Mha by 2030. The extension agents upload the results to the national soil management platform with the farmers unique identifier. Farmers' soils would be tested over time over time to track progress. 10% of samples would be sent to labs for validation and calibration of soil test kits. Once the model is proven thought the pilot, it is then scaled to carefully selected location with high soil variability. |
| | **A.3 - Pilot and scale the R&D for the development of tailored agriculture management plans**. These plans would be co-developed by farmers and extension agents, on the farmers' fields once the results from the sampling have been created (which should be available within minutes). The soil test results are compared to a pre-developed guideline which links soil health status to key recommendations on inputs and |

| | |
|---|---|
| | practices. The pilot phase would be used to validate the efficacy of this approach and to further improve on the pre-created guidelines which would then be scaled for use across the country in line with A2. |
| B. Support the transition of farmers to climate smart agricultural practices | **B.1 - Implement national soil and vegetation assessment, leveraging the proven land degradation surveillance framework (LDSF)** developed by the world agroforestry centre to understand degradation levels, and its drivers. This would be executed in close collaboration with farmers, the local governments. It would require sensitisation campaigns to help farmers understand expectations of them and how the data collected would be used to inform restoration actions. |
| | **B.2 – Using the stakeholder participatory approach, collaboratively design climate smart interventions with farmers,** farming communities, extension agents and relevant experts (private sector, research institutions, etc.). This would be done though workshops where key agroforestry regions, degradation hotspots and areas with healthy soil systems would be prioritized for implementation in B3. |
| | **B.3 - Pilot and scale appropriate climate smart agricultural practices** (e.g., agroforestry which can unlock carbon credit revenues for the government, silvopasture, halfmoon bans, etc. for grazing land). This would require the capacity development of farmers, extension officers, implementation partners, other relevant stakeholders. It would also require government support including the leasing of existing unused govt. facilities to private investors for e.g., seed nurseries. |

**Costing**

| | | **Gov Cost, M$** | | | | | | | **Private Sector Cost, M$** | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Component** | **Initiative** | **24/25** | **25/26** | **26/27** | **27/28** | **28/29** | **29/30** | **30/31** | **24/25** | **25/26** | **26/27** | **27/28** | **28/29** | **29/30** | **30/31** |
| A. Collection of soil data to enable the use of tailored inputs to | A.1- Identify the data gaps in existing and viable datasets on soil health status | 0.4 | | | | | | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | A.2- Pilot and scale | 0.1 | 3 | 5 | 13 | 16 | 16 | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| optimise crop yields | on-farm soil testing | | | | | | | | | | | | | | |
| | A.3- Pilot and scale the R&D for the development of guidelines for tailored input use | | 0.5 | 0.2 | 0.2 | 0.5 | 0.6 | 0.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| B. Support the transition of farmers to regenerative agricultural practices | B.1- Implement national soil and vegetation assessment | | 6 | 9.3 | 9.3 | 9.3 | 12 | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | B.2- Collaboratively design climate smart agriculture interventions | 0.2 | 0.2 | | | | | | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | B.3 - Pilot and scale appropriate climate smart agricultural practices | 0.3 | 5.5 | 8.3 | 8.3 | 1.7 | 11.0 | 11.0 | 1.7 | 34.0 | 51.0 | 51.0 | 66.3 | 68 | 68 |
| | **TOTAL** | **0.6** | **15** | **23** | **4.0** | **36** | **40** | **12** | **2** | **34** | **51** | **51** | **66** | **68** | **68** |

**Risks and Mitigation**

Adoption of climate smart practises would require changes which farmers may have not foreseen, thus potentially slowing the uptake.

- The socio-economic situations of farming households are considered into degradation assessment.
- The recommended climate smart practices in certain areas are aligned on and adapted in collaboration with local stakeholders.

The transition cost may be high for some farmers to manage and could also impact on food availability/production.

- Creating a bridge to ensure that the financial/land cost of transitioning is lowered or covered though financing or grants.

Absence of market or inputs (e.g., tree seedlings) leading to farmers being demotivated to continue with the transition.

- Linkages with other flagships to ensure sufficient inputs and markets for produce.
- Incentives and support for the private sector to ensure production and availability of relevant inputs.

**Post-2030**

- **Nationwide coverage of farmer-site level soil testing which is led by farmers**. The data could be uploaded to the soil database with farmers identifier. This data would allow the government and relevant partners to review the impact of practices and inputs on farmer fields over time to inform relevant adjustments as required.
- **Nationwide coverage of the areas under restoration/climate smart practices** which can include croplands, forests, woodlands, etc., setting up expanded coverage for a variety of carbon aggregators and establishing Tanzania as a hub for carbon trading in Africa.

**Flagship 4: Scale upstream and downstream market linkages for 2M+ smallholders to access quality inputs, markets, and other services, by formalising and scaling smallholder groups across 1.7M agriculture entities (e.g., farms/ponds), and incubating farmer-facing SMEs through BBT and third-party accelerators**

## Context

When smallholders* are **organised into groups**, they typically experience significant **productivity improvements**. First, organised groups wield **greater bargaining power**, enabling them to procure more affordable, high-quality inputs (including mechanisation) and negotiate better offtake prices for their products. Second, **formalised groups can establish stronger linkages with agro-dealers** than individual smallholders, facilitating both upstream and downstream market access. Moreover, **group formation facilitates easier access to financing** through risk-sharing mechanisms. Lastly, the **mutual learning and support network** within organised smallholder groups fosters greater resilience, especially during times of adversity.

However, **only ~15% of smallholders are organised, primarily through cooperatives.** While the cooperative model is well-recognised and has proven scalability (~4.5K AMCOs/fishing/livestock cooperatives today), **cooperatives are sometimes burdened by heavy gov't regulation** and local gov't interference within cooperative leadership. **Alternative organisational structures** like Associations and private sector-facilitated groups, such as Farmer Marketing Associations through TAHA, **present potential avenues for future scale-up.**

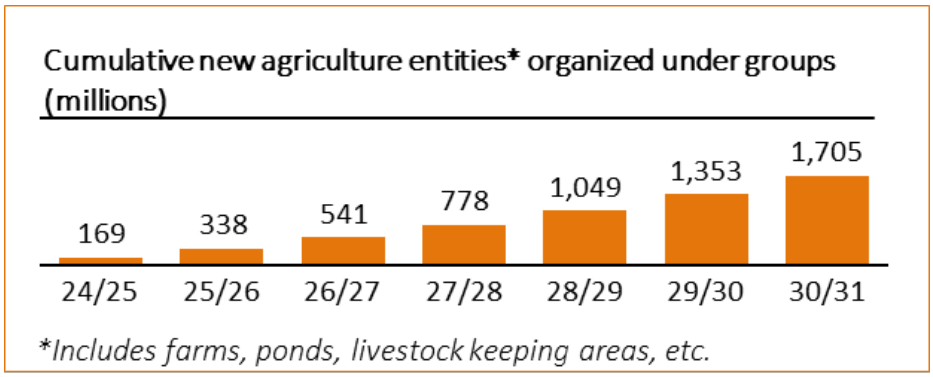
Smallholder groups can only **achieve optimal productivity when they have access to and are effectively served by agricultural SMEs**. These SMEs play a crucial role as intermediaries between groups and upstream/downstream markets, particularly in last-mile service delivery. However, the majority of agri-SMEs are **smaller, informal, household-run enterprises** with limited access to training, financing, and networks, hindering their scalability into medium- and large-scale enterprises. Initiatives like the BBT programme and third-party accelerator programmes can provide additional training and resources to incubate new agri-SMEs, **especially those led by entrepreneurial young people**. Existing SMEs can also be scaled up to better serve **more smallholder groups across priority commodities**. Promising examples of SMEs in select commodities with high potential to enhance farmer efficiency and productivity include: horticulture aggregators providing quality-controlled cold storage, feedlots for livestock fattening, and chilling stations for fish located near Beach Management Units.

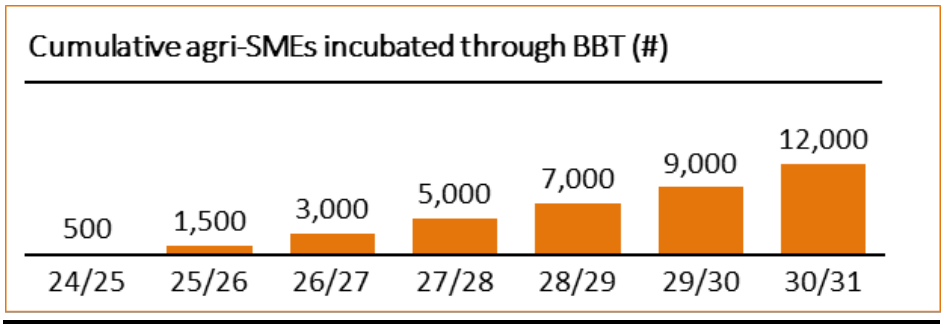
**Includes crop farmers, pastoralists/agro-pastoralists, and fisherfolk*

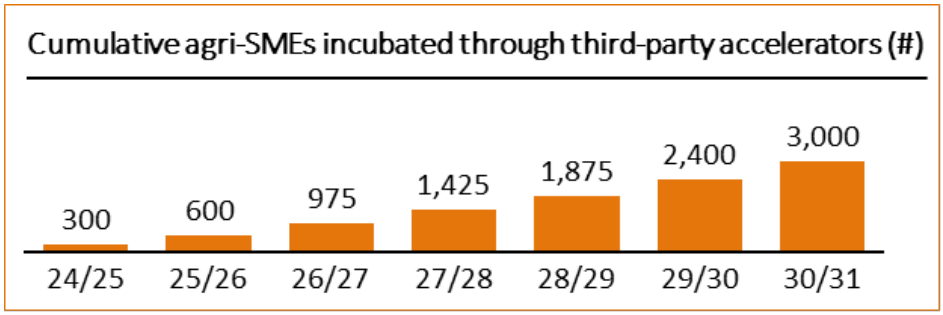
## Objective and KPIs

Smallholders across ~3.2M agriculture entities* are organized into groups, and **groups are supported by a flourishing agri-SME ecosystem led by millions of young people** across the country. Through this network, smallholders have access to affordable, high-quality inputs, services, and markets for offtake year-round.

**Smallholders across 1.5M ag. entities are already organized; Flagship aims to organise smallholders across an additional 1.7M ag. entities*


Cumulative new agriculture entities* organized under groups (millions)
169
338
541
778
1,049
1,353
1,705
24/25
25/26
26/27
27/28
28/29
29/30
30/31
*Includes farms, ponds, livestock keeping areas, etc.


Cumulative agri-SMEs incubated through BBT (#)
500
1,500
3,000
5,000
7,000
9,000
12,000
24/25
25/26
26/27
27/28
28/29
29/30
30/31


Cumulative agri-SMEs incubated through third-party accelerators (#)
300
600
975
1,425
1,875
2,400
3,000
24/25
25/26
26/27
27/28
28/29
29/30
30/31

**Initiatives**

| Component | Initiative |
|---|---|
| **A. Create and support new smallholder groups (incl. crop farmers, livestock keepers, and fisher folk)** | **A.1 - Conduct independent review of different smallholder aggregation models,** to understand which organising models are most effective by region/commodity (e.g., depending on production cycle, inputs requirements, typical farmer lifestyle, etc.). In parallel with independent review, **continue current MoA-led review of TCDC policies,** to minimise cooperative regulations where relevant, and boost overall efficacy of cooperatives |
| | **A.2 - Mobilise farmers across 1.7M agriculture entities** (including farms, livestock grazing areas, ponds) into **new groups, based on results of independent review in A.1**. Mobilisation efforts will include community outreach and engagement (e.g., via LGA-supported convenings, radio campaigns), membership drives, initial support to set up governance and basic infrastructure, and preliminary introductions/linkages to farmer-facing SMEs. Emphasize group formation with female leaders/ participation predominantly from female smallholders |
| | **A.3 - Provide ongoing capacity building and inspection for existing and new smallholder groups**, through local agents of existing entities (e.g., TCDC staff at LGA level). Capacity building could include assessment of strengths and opportunities for improvement, trainings in topics such as negotiations, and support in establishing/amending agreements with agri-SMEs |
| **B. Establish and equip youth-led agri-SMEs through BBT programme** | **B.1 - Create 12,000 smallholder-led and smallholder-facing SMEs across priority commodities,** through training high-potential youth entrepreneurs across the country. Programmatic supports for young people will include provision of initial inputs (including land, seeds, fertilisers, pesticides, fish fingerlings, equipment like cages, fish feed, animals, animal raising facilities, etc.), 6+ months hands-on training and incubation, and access to financing for later scale-up of businesses |
| | **B.2 - Recruit and train 4000+ young people to become private SME support agents,** that will support youth-led SMEs in B.1. Youth will be trained through gov't programme and subsequently placed in private companies (e.g., large-scale fertiliser and seed companies), providing input-specific or service-specific guidance to groups of smallholders |
| **C. Incubate smallholder-facing SMEs** | **C.1 - Create 3000+ new farmer-facing SMEs via third-party incubators/accelerators (e.g., SUGECO, Helvetas).** Key programmatic initiatives for SMEs should include business management training (including application of forecasting tools and basic market data), linkages to a range of financing options, and support in meeting licensing and regulatory requirement |

| | |
|---|---|
| **D. Continue and optimise provision of inputs, subsidies, and access to mechanisation** | **D.1 - Review best practices around inputs/mechanisation subsidies and other financial supports.** Review should include how subsidies should be distributed/priced to minimise market distortion, while still providing enough runway for smallholders to cross specific productivity threshold |
| | **D.2 - Subsidise critical inputs to smallholders via agro-dealers** (e.g., seeds, fertilisers, pesticides). Allocate and distribute subsidies using best-practice mechanisms found in Activity D.1. (e.g., direct distribution to smallholders, and/or reimbursement made to agro-dealers after they've sold inputs at discounted price to registered farmers) |
| | **D.3- Continue Board-led provision of inputs for traditional cash crops** (cashew, coffee, cotton, sisal). Inputs provided will include seeds, seedlings, fertilizers, pesticides, and farming tools (e.g., sprayers) |
| | **D.4 - Establish 50+ mechanisation hubs for smallholders to purchase and lease equipment**, including tractors, plows, hand-hoes, and fishing gears. Hubs will be constructed by MoA/MLF, but could later be sold to private sector management. Hubs should be strategically placed close to new smallholder groups in Activity A.2. and will be led by entrepreneurs trained in activities B.1 and C.1. |

**Costing**

| | | Gov cost, M$ | | | | | | | Private sector cost, M$ | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Component | Initiative | 24/25 | 25/26 | 26/27 | 27/28 | 28/29 | 29/30 | 30/31 | 24/25 | 25/26 | 26/27 | 27/28 | 28/29 | 29/30 | 30/31 |
| **A. Create and support new smallholder groups (incl. crop farmers, livestock keepers, and fisher folk)** | **A.1. - Conduct review of SHF aggregation models** | 0.9 | 0.9 | 0.7 | 0.1 | 0.1 | 0.1 | 0.1 | | | | | | | |
| | **A.2 - Mobilise farmers into new groups** | 1 | 1 | 1 | 1 | 2 | 2 | 2 | | | | | | | |
| | **A.3 - Provide ongoing capacity building for groups** | | 2 | 3 | 5 | 6 | 7 | 9 | | | | | | | |
| **B. Establish** | **B.1 - Create 12K farmer-** | 2 | 3 | 4 | 6 | 6 | 6 | 9 | 4 | 8 | 13 | 17 | 17 | 17 | 25 |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **and equip youth-led agri-SMEs through BBT programme** | **led and farmer facing SMEs** | | | | | | | | | | | | | | |
| | **B.2 - Train 4000+ young people to become private SME support agents** | | 0.1 | 0.2 | 0.4 | 0.5 | 0.6 | 0.8 | | 0.3 | 1 | 1 | 2 | 2 | 2 |
| **C. Incubate smallholder-facing SMEs** | **C.1 - Create 3000+ new farmer-led and farmer-facing SMEs** | | | | | | | | 3 | 3 | 4 | 5 | 5 | 6 | 6 |
| **D. Continue and optimise provision of inputs, subsidies, and access to mechanisation** | **D.1 - Review subsidies best practices** | 0.2 | 0.2 | 0.1 | | | | | | | | | | | |
| | **D.2 - Subsidise critical inputs to SHF** | 50 | 45 | 40 | 35 | 30 | 25 | 20 | | | | | | | |
| | **D.3- Continue Board-led provision of inputs** | *Costs covered in Flagship 6* | | | | | | | | | | | | | |
| | **D.4 - Establish mechanisation hubs** | 3 | 4 | 4 | 8 | 9 | 10 | 11 | | | | | | | |
| | **TOTAL** | 60 | 57 | 54 | 54 | 51 | 49 | 47 | 17 | 18 | 19 | 20 | 21 | 22 | 22 |

***Note:*** *Exact split for costing of activities B.1. and B.2. between gov't, dev. partners, and private sector is unknown*

## Risks & mitigation

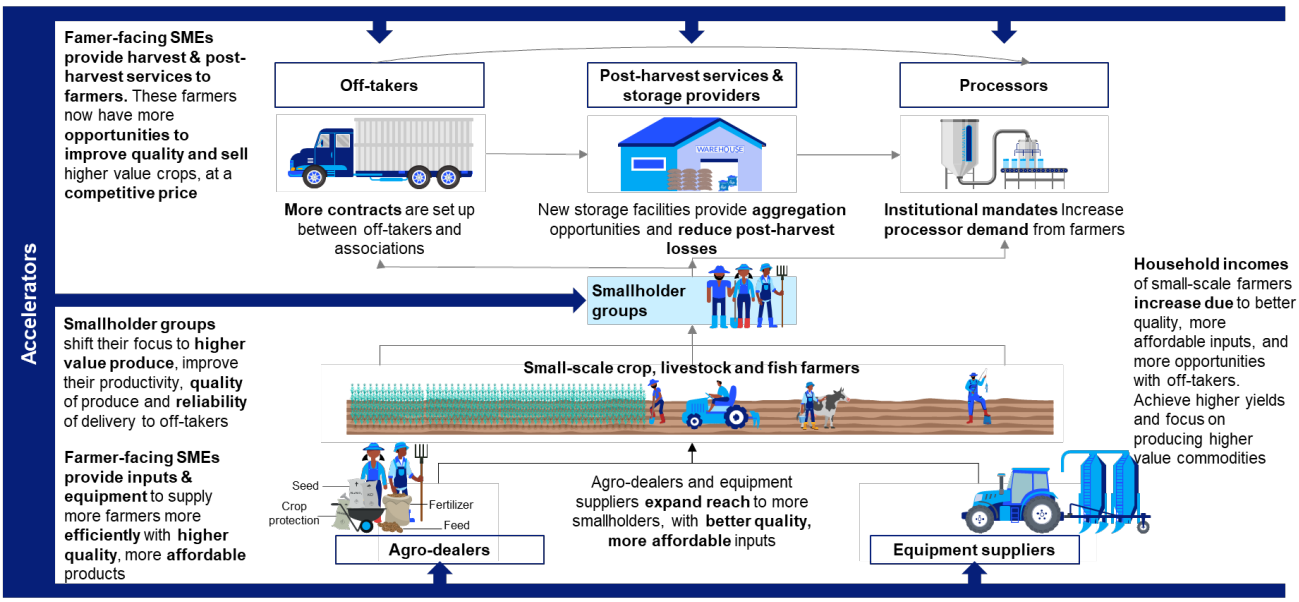
- **Smallholder groups that don't receive adequate support/training** (e.g. support to initially set up governance structure, initial introductions to agri-SMEs that can support them) **may dissolve before gaining traction**
    - Equip local staff to provide **more intensive, hands-on support to groups** during first year of group formation. Additionally, connect them with existing groups that are producing the same commodities and that have a proven track record, to facilitate peer learnings. Finally, ensure **lighter-touch capacity building efforts continue for 3-5 years** beyond initial group formation
- New agri-SMEs may face **similar agriculture-specific regulatory barriers as larger commercial players** when starting and operating their businesses (e.g., long wait times to stock products, given the multiyear process of registering certain seed and fertiliser varieties)
    - Accelerator programmes (including BBT) can **provide SMEs with technical assistance and other supports to overcome regulatory hurdles** (e.g., connect SMEs with AGCOT liaisons, raise challenges to TPSF and National Agriculture Working Group, etc.)

## Post-2030

- **Deploy new knowledge of which aggregation models work best** in each commodity/region, to further scale mobilisation efforts, so that **all smallholders are organised into relevant groups nationwide**
- **Scale countrywide network of agri-SMEs** to ensure every smallholder group has access to affordable, high-quality inputs, services, and markets for offtake on a consistent basis. **Youth entrepreneurs could remain at the forefront** of scaling SME operations and starting new ventures

### Farmer-facing SMEs can raise incomes for small-scale farmers by supporting better productivity and market access

Illustrative  Non-Exhaustive




Source: ASTGS Working Team analysis; AMP Working Team Analysis

## Flagship 5: Improve red meat & dairy farmers' access to market by promoting viable offtake volumes and high product quality

### Context

Compared to neighbouring countries, **Tanzania boasts ample agricultural land (including pastures) to raise red meat and dairy animals**, surpassing Kenya by 40% and Uganda by more than double.[116] With approximately 37 million cattle, 27 million goats, and 9 million sheep, **Tanzania ranks second only to Ethiopia in livestock population in Africa.**[117] Despite this wealth of resources, **the contribution of red meat and dairy to the national GDP remains relatively low, at 3.5% and 1.5%, respectively.**

Nevertheless, **livestock rearing still serves as a crucial source of employment for millions of households nationwide**, with over 2 million households engaged in raising red meat and dairy animals (26% of all agriculture households). **Red meat constitutes a substantial portion of the Tanzanian diet**, supplying over 70% of the total daily per capita energy from meat products. Increasing **dairy consumption could significantly enhance the overall nutritional quality** of the Tanzanian diet. Although per capita consumption is on par with some peer countries such as Uganda and Ethiopia (~40-45 litres/capita), it is 50% lower than per capita consumption in Kenya. Thus, enhancing livestock productivity would not only serve as a **critical engine for national economic growth**, but would also **improve the livelihoods and nutrition of millions of smallholders.**

**Smallholders** (pastoralists and agro-pastoralists) indeed stand poised to reap significant economic and nutritional benefits from improved productivity, given that they are also **responsible for 95%+ of all production.** However, **offtake rates of milk and red meat animals from smallholders remain low** due to several factors, including **inadequate production volumes** viable for the market, **lower animal quality** for niche or export markets, and **limited offtake infrastructure** with consistent market linkages.

The challenges of low production volumes and inferior animal quality stem from various factors, such as the **limited availability of affordable, high-quality inputs** like vaccines against prevalent diseases (with only around 35% coverage for indigenous cattle) and supplementary fodder for fattening. Furthermore, **access to livestock drinking water** is scarce, with an estimated annual deficit of ~115 billion litres/year. Additionally, the **availability of quality breeding services for improved and crossbred animals is limited**, with many artificial insemination technicians lacking adequate training to successfully inseminate on the first 1-2 attempts, leading to dissatisfaction among livestock keepers.

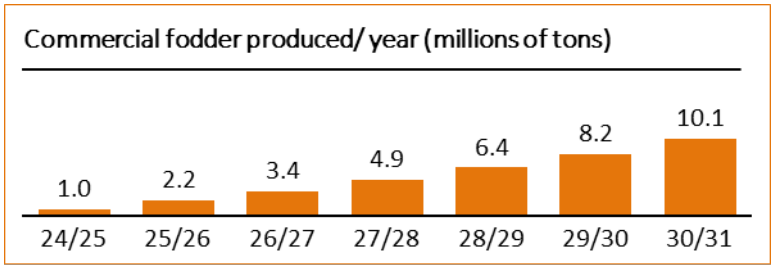
Limited offtake infrastructure with consistent market linkages is exacerbated by **inconsistencies in demand and pricing in local markets**. While livestock traders struggle to sell their animals, commercial processors and exporters face challenges in finding high-quality animals for purchase. **Pre-alignment on requirements for livestock raising**, such as animal traceability and minimum weight standards, could help mitigate these inconsistencies and foster a more robust market environment.

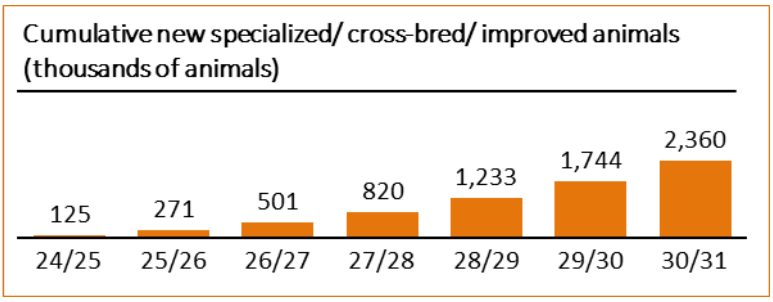
[116] World Bank Data Repository

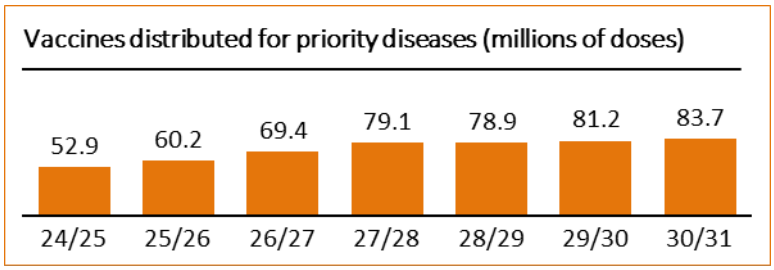
[117] FAO Tanzania

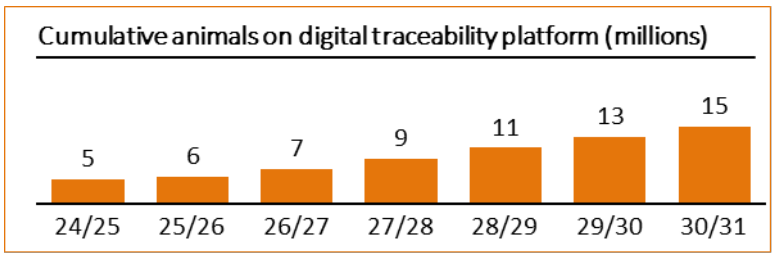
## Objective and KPIs

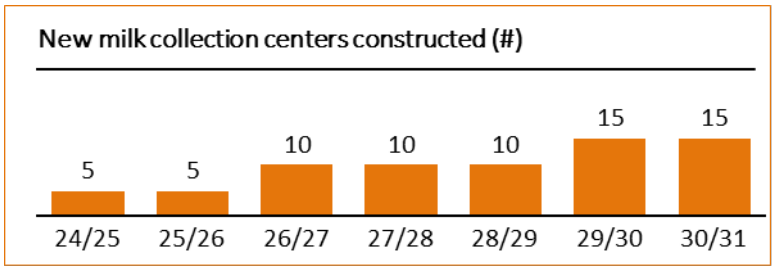
By 2030, **commercial fodder production will scale to 5-10M tons/year**, smallholders will raise **2.3M specialized/cross-bred/improved indigenous animals** with better genetics, **50% of all indigenous animals will be vaccinated against priority diseases**, and smallholders will have **improved market access** through new offtake sites, where they experience consistent demand and pricing for their products. Equipped with the **latest knowledge of climate-smart livestock raising practices**, these smallholders will be at the forefront of sustainability boosting protein intake across the country and regionally.

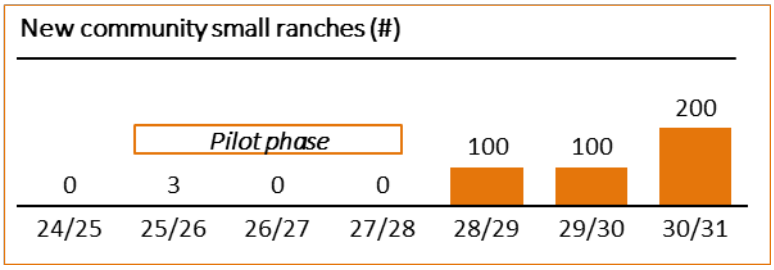





**Initiatives**

| Component | Initiative |
|---|---|
| A. **Increase fodder production via SHF and comm. players** | **A.1- Continue current efforts to test, refine, and certify the first domestic pasture seed.** Testing should consider productivity of domestic pasture seed vs. commonly imported seeds, to determine market viability before scaled multiplication.<br><br>While testing and certification efforts are being completed, continue multiplication and productivity improvements of available seeds in Government farms |
| | **A.2- Scale training programmes to ~15,000 smallholders to produce their own fodder** (including pasture, silage, and hay) through Farmer Field Schools (FFS), including young people from the BBT-LIFE programme. In addition to training, ensure that smallholders are equipped with initial inputs to begin production, including small land parcels (1.2 Ha each), seeds, and equipment. Encourage trained smallholders to also train peers, to multiply effect of FFS |
| | **A.3- Support and incentivise ~900 commercial fodder producers to scale operations in Tanzania**, through identification of suitable land contracts, capacity support to start/register new businesses, and provision of improved seeds for commercial players for the first 2-3 years of this initiative |
| B. **Increase production of specialised and improved breeds** | **B.1- Continue foundational breeding research at TALIRI to understand optimal genetics of improved indigenous cattle,** for highest potential yields and suitability to Tanzania's agro-ecological context. Breeding research will be used as input into creation of ~2K improved indigenous breeding stock, some of which can be used as parent stock for new community breeding programmes in Activity B.4 |
| | **B.2- Increase production of specialised and cross-bred animals at Livestock Multiplication Units (LMUs), through biological mating and community bull centres.** For biological mating, purchase ~1.3K new breeding bulls and 27K accompanying heifers to produce a total of ~80K new specialised/cross-bred animals over 7 years. For community bull centres, purchase unwanted, specialised male calves from commercial dairy processors, raise them in LMUs for 2 years, and then strategically |

| | |
|---|---|
| | place them in livestock-keeping communities for mating with heifers to produce ~900K more offspring with improved genetics |
| | **B.3- Scale semen production and insemination services through the National Artificial Insemination Centre (NAIC).** Purchase 40 new breeding bulls to produce semen for insemination services of 1.3M animals (36K semen straws/bull/year). Continue selling ~75% of semen straws to private AI technicians for insemination services. For the remaining 25% of semen straws, equip existing gov't AI technicians with refresher training courses to improve service quality. Additionally, hire new technicians to scale insemination services, and research best practices around incentives schemes to enhance quality of insemination services |
| | **B.4- Establish community breeding programmes in 3 villages,** placing 100 breeding bulls in each location. Breeding stock for each of the three villages will be sourced from different locations/be comprised of different genetics, to test and assess efficacy of different bull types (use imported breeding bulls in village 1, improved indigenous breeding stock from TALIRI in Activity B.1. in village 2, and bulls created via AI/embryo transfer in village 3). In each village, work with development partners to train ~20 livestock keepers on breeding practices, including how to properly identify and select animals for breeding, and how to then assess efficacy of selection/record data for future learnings |
| **C. Improve animal health quality and coverage** | **C.1- Construct 3,000 dip tanks in villages with the highest rates of tick-borne diseases,** but where current availability of dip tanks is particularly low. Simultaneously procure acaracides to fill dip tanks, and collaborate with extension agents to train livestock keepers on the value of dipping and with what frequency dipping should occur |
| | **C.2- Increase vaccine production and distribute vaccines** for CBPP, CCPP, and PPR to 50% of cattle, sheep, and goats nationwide, targeting efforts in villages with the highest rates of disease prevalence. Additionally, procure ECF and FMD vaccines from abroad and disburse them to 50% of all cattle (until domestic production certification has been achieved in Activity C.3.) Simultaneously procure 20 cooling vehicles and cold storage facilities to mitigate vaccine spoilage during the distribution process |
| | **C.3- Establish required infrastructure and receive certification at Government vaccine centre to begin production of ECF and FMD vaccines.** Infrastructure requirements include new buildings to house BSL4 laboratories, laboratory equipment, HVAC systems, cold-chain storage, and packaging materials |
| D. **Expand livestock traceability platform** | **D.1- Upgrade and expand national livestock traceability system.** First, assess current usability and interoperability of system to determine necessary upgrades. Once upgrades have been made, scale registration to 10M new red meat and dairy animals, beginning with registration of animals in commercial farms (given greater purchasing power to buy animal ear tags, and value from meeting traceability requirements for certain import markets) |

| | |
|---|---|
| E. **Improve offtake rates through MCCs & small ranches** | **E.1- Upgrade 79 milk collection centres (MCCs) where capacity is lower than offtake volumes, and construct 70 new MCCs.** For upgrades of existing centres, procure cooling tanks and personnel for tank installation. For new MCCs, scope and select locations with high milk production but limited accessibility to existing collection points, with proximity to commercial dairy processors for offtake. After initial set-up, identify new dairy cooperatives in Flagship 4 (Activity A.2) to manage and operate new MCCs. |
| | **E.2- Pilot and scale community small ranches for improved dairy and red meat productivity, and to facilitate formalised offtake agreements.** Over the first 3 years, select 10 different villages to pilot ranches. In each ranch, support mobilisation of smallholders into one designated grazing area (~120 hectares/ranch), and support the group with planning for procurement of all required inputs such as vaccines, fodder, and sheds. Additionally, construct 1 bore hole and 1 silage storage facility in each ranch. Facilitate dialogue between smallholders and commercial processors/exporters to align on production requirements for guaranteed offtake. Assess results of pilot ranches at the end of year 3, and make any necessary programme changes before scaling to ~400 new ranches over the following 3 years |

**Costing**

| | | Gov cost, M$ | | | | | | | Private sector cost, M$ | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Component | Initiative | 24/25 | 25/26 | 26/27 | 27/28 | 28/29 | 29/30 | 30/31 | 24/25 | 25/26 | 26/27 | 27/28 | 28/29 | 29/30 | 30/31 |
| **A. Increase fodder production via SHF and comm. players** | **A.1. – Certify first domestic pasture seed** | 0.3 | 0.3 | | | | | | | | | | | | |
| | **A.2- Train smallholders on fodder production** | 1 | 2 | 2 | 3 | 4 | 5 | 5 | | | | | | | |
| | **A.3- Support commercial fodder producers** | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 2 | 2 | 2 | 3 | 3 | 3 | 4 |
| **B. Increase production of special** | **B.1- Continue breeding research at TALIRI** | | 1 | 1 | 1 | 1 | 1 | 1 | | | | | | | |
| | **B.2- Increase specialised** | | 4 | 6 | 8 | 9 | 11 | 13 | | | | | | | |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **ised and improved breeds** | **animal production at LMUs** | | | | | | | | | | | | | | |
| | **B.3- Scale NAIC semen production and insemination** | 0.3 | 0.5 | 0.6 | 0.5 | 0.6 | 0.7 | 0.8 | | | | | | | |
| | **B.4- Establish 3 community breeding programmes** | | 0.7 | 0.7 | 0.6 | 0.6 | 0.6 | 0.6 | | | | | | | |
| **C. Improve animal health quality and coverage** | **C.1- Construct 3,000 dip tanks** | 9 | 9 | 9 | 14 | 14 | | | | | | | | | |
| | **C.2- Increase vaccine production and distribution** | 42 | 46 | 50 | 55 | 38 | 39 | 40 | | | | | | | |
| | **C.3- Expand TVI vaccine production capacity** | | | | | 11 | 11 | 11 | | | | | | | |
| **D. Expand livestock traceability platform** | **D.1- Upgrade and expand traceability system** | | 0.5 | 0.5 | 0.1 | 0.1 | 0.1 | 0.1 | | | | | | | |
| **E. Improve offtake rates through MCCs & small ranches** | **E.1- Upgrade and construct new MCCs** | 1 | 1 | 1 | 0.4 | 0.4 | 0.4 | 0.4 | | | | | | | |
| | **E.2- Pilot and scale community small ranches** | | 0.7 | 0.1 | 0.1 | 25 | 25 | 50 | | | | | | | |
| | **TOTAL** | **60** | **69** | **71** | **79** | **101** | **91** | **119** | **3** | **4** | **4** | **5** | **5** | **6** | **6** |

**Risks & mitigation**

- **Climate change** could exacerbate **challenges in producing commercial fodder**, especially during prolonged dry seasons, which will have downstream effects on animal quality (e.g., less feed available for fattening services)
    - Prepare for prolonged drought seasons by **storing fodder as hay** during wet season, to ensure availability of adequate feed year-around
    - **Innovate on fodder seed varieties** at TALIRI to create seeds that are more adaptable to changing climate conditions, and incentivise private seed companies to also innovate on fodder seed varieties
- **Global supply chain disruptions** due to geopolitical risk or other causes **could stifle importation of critical vaccines** for most common diseases, such as ECF and FMD
    - Continue to build **domestic production capabilities** to produce ECF and FMD vaccines in-house, and **evaluate needs to construct additional dip tanks** to help prevent tick-borne diseases such as ECF
- Despite Government efforts to improve red meat production quality in community small ranches and facilitation of commercial offtake agreements, **red meat offtake rates for niche/export markets could remain low**
    - **Pilot the community small ranch operating model in 3 sites before scaling-up construction**, to understand what is/isn't going well to meet commercial offtake requirements, and adapt establishment of new ranches accordingly

**Post-2030**

- **Scale commercial fodder production** based on projected market growth both domestically and in export markets, using improved domestic seed varieties and latest production technologies
- **Scale community breeding programmes** to continue **improvements of the indigenous breed** that have highest adaptability to Tanzania's agro-ecological context
- **Increase domestic milk processing levels** to reduce reliance on imported dairy products and significantly reduce consumption of unpasteurised milk

## Flagship 6A: Develop traditional cash crops and major food crops through board-led excellence - Traditional Cash Crops

### Context

Tanzania's traditional cash crops accounted for ~$0.5B in exports in 2022/23. Cash crops are important for driving economic growth, empowering smallholder farmers, improving market access and quality, promoting sustainable development, and fostering sectoral coordination in Tanzania. These crops are mostly produced by smallholder farmers who are generally organized in cooperatives for ease of accessing inputs, extension services and markets. These crops generally include 7 crops, each which have their own governing crop board in the country. This flagship focuses on the 4 crops that are believed to have the opportunity to provide the greatest impact from specific interventions that can be orchestrated and led by crop boards to support smallholders in boosting production, quality, and market access. These crops are coffee, cashew nuts, cotton, and sisal, which accounted for ~$0.45B in exports in 2022/23.

Examples of ongoing initiatives include:

- Coffee: provision of coffee seedlings to small holder farmers in the Kagera region
- Cashew Nuts: creation of new farms in other regions, provision Sulphur dust to control powdery mildew on cashew trees
- Cotton: piloting of drone-based spraying of pesticides for efficient and cost-effective crop protection verses the current backpack sprayer method, Board-led annual seed multiplication
- Sisal: rejuvenation of abandoned farms to make them productive again

**Crop-specific context**

*Coffee*: Tanzania is the 4th largest producer of coffee in Africa with 60% Robusta and 40% premium Arabica. Tanzania has the potential to benefit from the large and growing global coffee market, valued at 127 billion USD in 2022 and expected to grow at >4.7% to 20230 (compounded annually). However, Tanzania's own production recently shrank (e.g., in Kilimanjaro) due to ageing plantations, urbanisation, poor aggregation and grading practices, which reduced productivity and profit margins, hence lowering the incentives of farmers to invest in its development. While coffee is globally mostly sold based on aroma with over 17 grades, it is sold as a commodity in Tanzania.

*Cashew nut:* Tanzania is the second largest producer of cashew nuts in Africa, accounting for ~11% of production on the continent. Cashew is a priority for the country given it's the growth in the African cashew market (4.5% CAGR expected in 2021-26) value addition potential. Smallholders constitute 80% of all cashew producers, the remainder being medium scale. Over 95% of cashew produced is exported, with less than 10% processed. The export value, however, has recently decreased (by 8% in 2020/21-22/23) due to declining market prices. The productivity of cashews (0.7 MT/ha) is 26% and 86% lower than that of neighbours Kenya and Malawi, respectively.

*Cotton:* Less than 3% of cotton produced in Africa comes from Tanzania. At the same time, the country currently has ~1500 MT of processing capacity of which only 30% is used, indicating potential to grow processing. Overall production has greatly declined with current production only able to meet 30% (284k MT) of the available processing capacity of the ginneries (1,500 MT). Of the total production, only 20% further processed locally. Average productivity is poor (0.7 MT/Ha) compared to farmers adopting good agricultural practices in the same locality (1.7 MT/ha).

*Sisal:* Tanzania is the largest producer of sisal in Africa, and second in the world after Brazil. With growing global demand for sustainable products, Tanzania has the potential to capture market growth. Current production is about 50,000 MT of sisal fibre, of which over 70% is exported in fibre form and only 30% is further processed into higher value products such as sisal sacs, indicating that Tanzania is not effectively capturing the value addition potential.

**Challenges**

Achieving effective growth of the crops necessitates overall harmonisation of board mandates to streamline efforts and maximise impact. The challenge is significative due to the low productivity of the crops compared to peers and best practices, highlighting the need for targeted interventions. Limited coordination between stakeholders along the value chain further compounds challenges, exacerbated by inadequate knowledge and enforcement of established standards. Moreover, there is a disconnect between production practices and market demands, underscoring the importance of aligning strategies to meet evolving market requirements. Addressing these issues is complicated by the limited institutional capacity for effective oversight and impact, emphasising the urgency for comprehensive reforms and capacity-building initiatives.

**Crop-specific challenges**

*Coffee:* Productivity of coffee is 70% lower than neighbours such as Uganda. International market considers Tanzanian coffee to be of lower quality due to mixing of grades at points of production and aggregation. Most Agriculture Marketing Co-operative Societies (AMCOS) focus on boosting production and not grading.

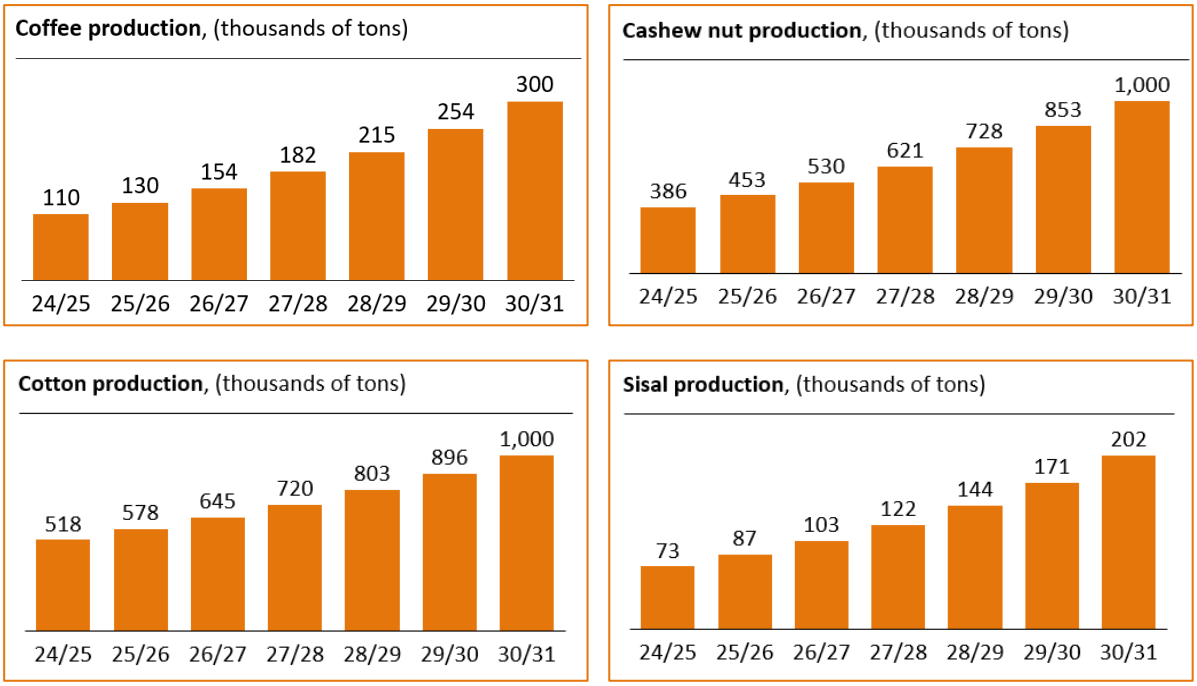
*Cashew nut:* Most cashew trees are over 40 years old with poor management of top working and limited use of inputs. Current predominant varieties are vulnerable to pests and diseases. Almost all cashew apple is thrown away instead of being used to create other products.

*Cotton:* Key challenge to cotton include very low productivity due to lack of capacity of TARI to produce enough early generation cotton seeds, poor pest management leading to loss of up to two-thirds of production and lack of proper soil health management. Additionally, market price fluctuations combined with high production costs because of poor productivity, leave little incentive for farmers to invest in the development of the commodity.

*Sisal:* The sisal industry currently operates at a primary processing capacity of 50,000 MT/year, despite having a potential harvest of up to 80,000 MT/year. There is a need to increase production and productivity to meet trends in global market growth and sustainability. Moreover, there is a need to increase primary processing to meet harvest potential and further value addition. Only 2% of the entire sisal plant is being used, the rest is discarded. Several large sisal plantations were abandoned a few years ago and need to be revived.

**KPIs**

The overall objective of this flagship is to double income obtained from traditional cash crops by enabling farmers to meet market requirements to improve quality, grading and productivity through board led orchestration of actors and resources across the value chains. The specific production targets* are indicated below.




**Production targets are for the full potential; for a breakdown of this full potential into a) the minimum required to achieve 10% annual growth by 2030 and b) the additional opportunity, see the commodity-specific deep dives for additional details.*

**Initiatives**

| Component | Initiative |
|---|---|
| **A. Raise production of cotton to 1000k MT** | **A.1 - Orchestrate the cotton value chain across flagships with a focus on:**<br><br>- Support for extension services by developing agronomic standards, maintaining board hired extension service providers (1 per district with 36 in total currently) and coordinating with local government agency extension officers<br><br>- Facilitation of input support via ginneries, in which farmers receive inputs as a loan which is later deducted from the value of their production (inputs include sprayers, weeding tools, pesticides, improved seeds, etc.)<br><br>- Coordination and financing R&D of cotton seed breeding with TARI and facilitating and financing the multiplication of cotton seeds via TOSCI-trained and -certified ward-level seed multipliers |
| | **A.2 – Pilot and build business case for spraying cotton farms with drones by:**<br><br>- Proving effectiveness, financial viability<br><br>- Then facilitating transfer of operations to private players |
| **B. Raise production of sisal to 202k MT** | **B.1 - Orchestrate the sisal value chain across flagships with a focus on:** |

| | |
|---|---|
| | - Facilitation of investment in decorticators to increase primary processing of sisal leaves to fibre to match field production<br><br>- Facilitation of input support via cooperatives, including the distribution of subsidized seedlings to smallholder farms to increase cultivation<br><br>- Increase in area under cultivation by turning previously abandoned estates into productive land through requisition from private sector and redistribution to small holder farmers to incentivize long-term investment in the commodity |
| | **B.2 – Increase in secondary processing**, local utilisation of sisal fibre and byproducts by exploring and promoting new business opportunities in sisal to private sector to capture additional value from sisal fibre products and the remaining 98% of the plant that is currently discarded |
| **C. Raise production of coffee to 300k MT** | **C.1 - Orchestrate the coffee value chain across flagships with a focus on**:<br><br>- Board-led increase in productivity through the development of extension, including:<br><br>- Board-funded training of TOT personnel via TACRI who provide extension services to farmers<br><br>- Rejuvenating of old plantations by promoting practices such as pruning and stomping through LGA extension officers<br><br>- Developing agronomic standards<br><br>- Promoting GAP<br><br>- Maintaining board-hired extension service providers<br><br>- Board-led increase in input access, production and distribution:<br><br>- Developing a fertilizer credit scheme to ensure access of fertilizer to smallholder farmers<br><br>- Board-funded R&D and breeding of improved seeds via TACRI, multiplication of coffee seedlings via contracts with multiple nurseries, distribution of seedlings to farmers via AMCOS by LGAs<br><br>- Board-led registration of farmers and stakeholders, including registering contract farmer agreements to enable off takers to provide inputs (fertilizer, pesticide) to farmers in exchange for their production<br><br>- Intensification of cultivation of existing coffee farms, and establishment of new coffee estates, both in traditionally grown and open areas for coffee |
| | **C.2 - Improve coffee quality and value addition by:** |

| | |
|---|---|
| | - Promotion of the use of central pulping units<br><br>- Establishment coffee certification institutions<br><br>- Improvement of the participation of young people and women in coffee production |
| **D. Raise production of cashew nuts to 1000k MT** | **D.1 - Orchestrate the cashew nut value chain across flagships with a focus on**<br><br>- Support of extension services, especially in GAP, by:<br><br>- Developing agronomic standards and maintaining Board-hired extension service providers<br><br>- Cashew board-led training of trainers (TOT) programme run by TARI to train LGA extension officers on GAP to promote GAP, including agronomic practices, disease and pest control, rehabilitation of old abandoned cashew farms (e.g., pruning and top working)<br><br>- Facilitation of input support via cooperatives (e.g. sulfur)<br><br>- Facilitation of production and distribution of seedlings for new and existing plantations in the following ways:<br><br>- Board finances and procures improved polyclonal seeds for cashew nuts<br><br>- Board provides improved seeds to LGAs to create nurseries and produce seedlings through farmer groups registered by TOSCI, which are financed by the Cashew board<br><br>- LGAs distribute seedlings to farmers for free<br><br>- Board-led expansion of land under cashew cultivation in new cashew growing regions through the following procedure:<br><br>- LGAs collect and provide Cashew board expressions of interest to start cashew cultivation<br><br>- TARI conducts surveys and feasibility studies to identify new high potential areas for cashew expansion<br><br>- LGA then collect and provide the Cashew board the amount of farmers interesting in growing cashew and their total land available<br><br>- Cashew board estimates demand for seedlings and establishes nurseries to supply those seedlings through the LGAs |

**Cost**

| | | Government cost, M$ | | | | | | | Private sector cost, M$ | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Component** | **Initiative** | 24/25 | 25/26 | 26/27 | 27/28 | 28/29 | 29/30 | 30/31 | 24/25 | 25/26 | 26/27 | 27/28 | 28/29 | 29/30 | 30/31 |
| **A. Raise production of Cotton to 1Mn MT** | **A.1 – Orchestration of the cotton value chain across flagships** | 10 | 9 | 9 | 8 | 8 | 7 | 7 | | | | | | | |
| | **A.2 – Pilot and build business case for spraying cotton farms using drones** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | | | | | |
| **B. Raise production of Sisal to 202k MT** | **B.1 – Orchestration of the sisal value chain across flagships** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | | | | | |
| | **B.2 - Increase secondary processing and local utilisation of sisal fibre and byproducts** | | | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 3 | 3 | 3 | 3 | 2 |
| **C. Raise production of Coffee** | **C.1 – Orchestration of the coffee value chain** | 4 | 8 | 6 | 4 | 3 | 1.4 | 0.2 | | | | | | | |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **to 300k MT** | **across flagships** | | | | | | | | | | | | | | |
| | **C.2 - Improve coffee quality and value addition** | 0 | 0 | 2 | 2 | 2 | 2 | 2 | | | | | | | |
| **D. Raise production of Cashew nuts to 1Mn MT** | **D.1 – Orchestration of the cashew nut value chain across flagships** | 12 | 12 | 12 | 5 | 5 | 5 | 4.5 | | | | | | | |
| **TOTAL** | | 28 | 31 | 32 | 22 | 20 | 18 | 17 | 2 | 2 | 3 | 3 | 3 | 3 | 2 |

## Flagship 6B: Develop traditional cash crops and major food crops through board-led excellence – Major food crops

### Context

Major food crops include maize, paddy, wheat, pulses, cassava, banana, and others, all of which are mostly produced by smallholder farmers who are generally not organized. They tend to have lower income due to low productivity and limited access to finance, quality inputs, extension services and organized market. Maize, cassava and banana make up 60% of the total crop production volume in the country, with maize being the most widely planted crop grown by >60% of farming households and responsible for 40% of the country's caloric intake.

In terms of area under cultivation, Maize is cultivated across 4.9mn Ha across Tanzania, covering almost 33% of total area cultivated 99.7% of which is my small holder farmers. The same can be seen in paddy farming where almost 99.3% of land cultivated for paddy is my small holder farmers.

However, production of major food crops has grown at an average rate of 6.6% per annum over the last three years. Beans are a particularly strong crop for Tanzania, with the country being the largest producer in Africa, representing about 18% of the continent's production. Maize has seen a growth of 7% per annum, whereas paddy production has experienced a 7% annual decline. The drop in production during 2021/2022, attributed to high fertilizer prices and unreliable rainfall, prompted government interventions such as fertilizer subsidies and the expansion of irrigation.

Unlike the traditional cash crops, the remainder of the crops in Tanzania, such as the ones covered in this flagship, have not had a dedicated body to oversee their development in the past. The government has recently set-up the Cereals and Other Produce Regulatory Authority (COPRA) with the hope to fill this gap. The specific role that COPRA will play in the various crops and how it will impact their growth is currently being discussed. This flagship hence covers interventions that could possibly be undertaken by COPRA or by any of the other entity. The role that COPRA would play is dependent on the final design of the governance and mandate of COPRA.

The government has already been engaged in activities to develop these crops.

Examples of ongoing initiatives include:

- Creation of COPRA to support the development of crops not under existing traditional cash crop boards
- Increase production and distribution of quality, improved, and affordable inputs through subsidy programmes i.e., Seeds, Fertilizers, IPPM techniques.
- Collection and dissemination of market intelligence via cross-agency collaboration (e.g., Rural Entrepreneurs Network Tanzania)
- Creation of value chain specific development strategies (e.g., paddy, pulses, etc.)

This flagship focuses on the specific interventions that are needed to support smallholders in their struggle to increase incomes by ensuring a market environment in which actors across entire value chains of priority crops can enjoy a thriving market by boosting farmer productivity, enforcement of standards, market fairness, transparency, and improved export efficiency. The main priority crops focused on in this flagship include Maize, Paddy and Pulses (which includes kidney beans, pigeon peas & green gram).

However, the initiatives under this flagship also span across other priority crops that have been highlighted across other flagships and commodity pages. These include *sorghum, banana, avocado, cloves, tomato, Irish potato, cassava, sunflower and sesame.*

**Crop-specific context**

*Maize:* Maize is one of Tanzania's largest commodities; it constitutes 40% of caloric intake, is grown on an estimated 4 million ha of land and consumes 50% of all fertilizer used in the country. Maize is also a major crop on the continent, with the market estimated at 41.4 billion USD and expected to reach 57.3 bn USD by 2029 (6.7% CAGR). It is also considered the staple food for most of Sub-Saharan Africa. Moreover, maize is an important smallholder commodity, as 85% of all Tanzanian maize is produced by smallholders across the entire country, mostly for subsistence. ~3 million farming households are engaged in maize production (out of a total of ~5 million engaged in crops overall) and the commodity takes up >8% of agricultural GDP.

*Paddy:* Paddy is an important staple commodity in Tanzania, responsible for 4% of total AgGDP and 20% off cereals AgGDP in 2022, grown by 1.3 million households, harvested on 1.5 million ha and taking up 90% of all irrigated land. In Sub-Saharan Africa, rice consumption is to grow by 6% a year, but most African countries are not self-sufficient producers, indicating an opportunity for Tanzania to export paddy. In Tanzania itself, paddy is the fastest growing cereal in terms of consumption, (growing 12% annually) and features a high level of farmer organisation (given the requirements of irrigation farming). There are ongoing efforts to improve the subsector (e.g., improvements in land, water, irrigation, infrastructure) and opportunities stemming from urbanisation and demand for high-value rice.

*Kidney beans:* Kidney beans come in many varieties in Tanzania, including rose coco, red kidney beans, and light speckled, all of which are exported. Other varieties (e.g., sugar, yellow, white, red speckled) are highly consumed by Tanzanians. Given Tanzania's large amount of land and diverse climate, there is potential to plant kidney beans throughout the year (with irrigation) in different regions (so as to compete with seasonal imports). While Tanzania is the main market for kidney beans (prices have increased recently because of rising local demand), there is also a regional market. Large foreign investors have been involved in the value chain.

*Pigeon peas:* Tanzania's pigeon pea sub-sector has been growing over the past two years. At the same time, there is growing global demand, especially from the Indian subcontinent (e.g., India's imports grew 34% to 1.2 million MT in 2023-24). Tanzania is second only to Mozambique and Malawi in Africa for pigeon pe production, with potential to produce 400 MT/year. The sector has stronger standards than other beans given that the largest market is India. Given the large volume and importance for export, quality-promoting practices are maintained, including at the farm level. The three primary varieties are those grown, Morogoro/Dodoma, Mtwara and Arusha, the lattermost being the preferred in India. There are ongoing initiatives to better structure the market and promote processing.

*Green gram:* Green gram is one of Tanzania's key pulses, being among the commodities highlighted in the Pulses Roadmap and having a high production potential (including the ability to be grown in rice-cultivating areas). Globally, demand for mung bean is increasing, particularly in India (50% of consumption) and Asia-Pacific generally (75%), driven in part by increasing demand for vegan food (a market that will grow by ~11% p.a. to 2030) The primary export destinations are India, Pakistan (used for direct consumption) and Europe (used for sprouting). India has begun using a quota system in importing green gram from African countries, moving export demand to other Asian countries. While green gram is consumed in Tanzania, it is difficult to store.

Contexts for other crops indicated in this section are covered under the specific commodity pages (including sorghum, banana, avocado, cloves, tomato, Irish potato, cassava, sunflower, sesame).

## Challenges

The food crops sub-sector faces multifaceted challenges, ranging from a lack of clear coordination among stakeholders along the value chain to overall low productivity across various crops compared to best practices. These issues are compounded by limited knowledge and enforcement mechanisms to ensure compliance with established standards, further exacerbated by a misalignment of production practices with market requirements and demand. Moreover, there's a glaring gap in institutional capacity, hindering effective oversight and impactful interventions within the sector. Addressing these interconnected challenges demands a holistic approach encompassing enhanced collaboration, knowledge dissemination, regulatory enforcement, market-driven strategies, and bolstered institutional capabilities.

### Crop-specific challenges

*Maize:* Maize in Tanzania is of low yield and quality due to the limited adoption of best practices and lack of quality inputs. There are many local varieties of the commodity, and this can be a challenge for quality control. Additionally, quality and food safety standards are poorly implemented. Farmers themselves are often not organized into groups, limiting their access to inputs, finance, and the market. Climate change heavily impacts maize, exposing it to drought and unpredictable weather.

*Paddy:* Paddy in Tanzania faces disadvantages in certain parts of the value chain. At the production level, cultivation is often highly dependent on rain and lacks quality inputs (mainly improved seeds and fertilizer, machinery). The commodity suffers from poor quality on account of inadequate storage infrastructure. In processing and marketing there is an opportunity to improve value addition and regional branding.

*Kidney beans:* The challenges with kidney beans in Tanzania begin at the farm, where producers lack knowledge in planting practices and improved varieties, with many planting only locally-consumed seeds. Low quality of inputs and climate change effects lead to low productivity. Seed distribution is hampered by the lack of infrastructure. Once harvested, beans often come mixed together (leading to low quality in the absence of agronomic guidelines), requiring labour-intensive sorting to make them export ready. Pests (e.g., weevils) are also a challenge. Furthermore, post-harvest management at the household level is inadequate and price uncertainties in export can create income instability.

*Pigeon peas:* Tanzania's pigeon pea subsector features challenges with the production, distribution, and handling of improved seeds. Combined with climate change effects, this lack of access to quality inputs results in low productivity (1.6x less than Malawi's). The pigeon peas also tend to have a high moisture content (17 - 20% vs. the standard of <14%), which causes problems in processing. As with other pulses, the value chain also has challenges in post-harvest management, price fluctuations, market access and the absence of agronomic guidelines.

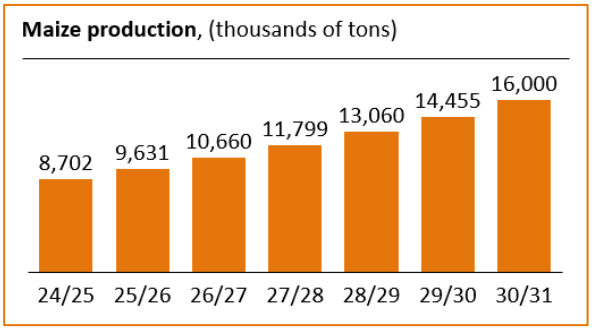
*Green gram:* Green gram in Tanzania has quality issues reflected in the small size of the beans (smaller than the typical 4 mm diameter), the fact that the beans are often mixed with other parts of the plant, and the beans' discoloration. Inputs are poorly distributed and agronomic standards are often not followed (e.g., grains are re-used to make seeds, which can lead to

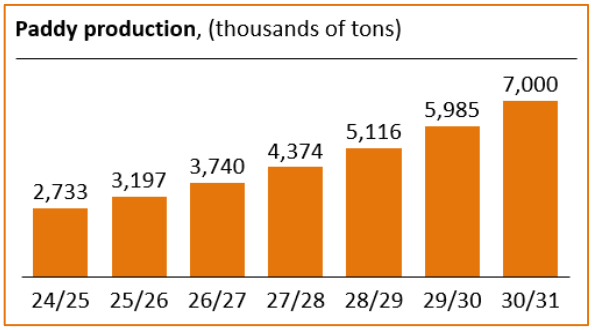
the spread of pests and disease). Farmers often do not have the knowledge or capacity to follow modern agronomic techniques. As a result of these various factors and climate change effects, productivity for this commodity is low.

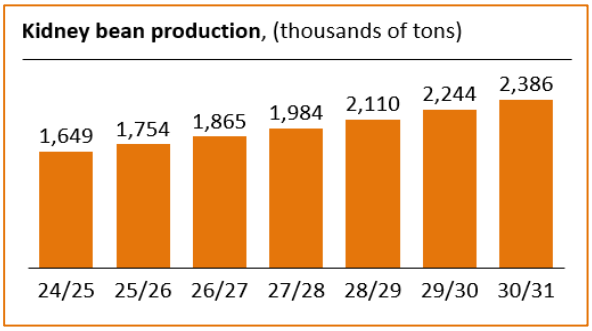
Challenges for other crops indicated in this section are covered under the specific commodity pages (including sorghum, banana, avocado, cloves, tomato, Irish potato, cassava, sunflower, sesame).

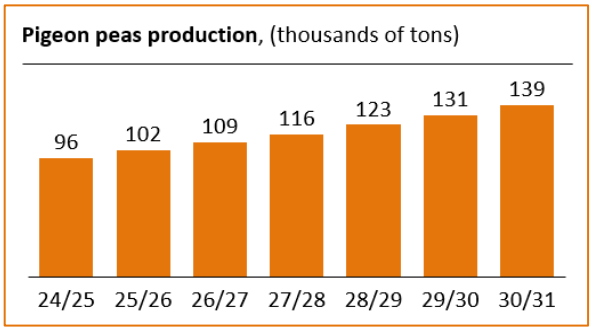
**KPIs**

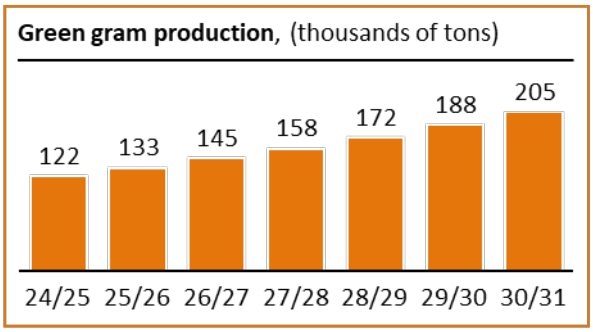
The objective of this flagship is to double income obtained from major food crops by enabling farmers and other actors to meet market requirements to improve quality, grading, productivity and overall fairness and market transparency through board-led excellence. The KPIs* at the yearly level for maize, paddy and pulses (soya bean, kidney beans, pigeon peas and green gram) are indicated below. The targets for the other crops mentioned are covered in more detail across other flagships (e.g., commercialization) or in their specific commodity pages.




**Production targets are for the full potential; for a breakdown of this full potential into a) the minimum required to achieve 10% annual growth by 2030 and b) the additional opportunity, see the commodity-specific deep dives.*

KPIs for other crops indicated in this section are covered under the specific commodity pages (including sorghum, banana, avocado, cloves, tomato, Irish potato, cassava, sunflower, sesame).

**Initiatives**

| Components | Initiatives |
|---|---|
| **E. Grow agricultural production and exports for cereals and other produce with a focus on maize, paddy, pulses, wheat, sunflower, pulses, soya beans, banana, avocado, cloves** | **E.1 - Orchestrate priority value chains across flagships with a focus on boosting certified seed production** (to 251k MT), driving farmers and stakeholders' registration (to register 9.9 million), supporting farmer organisation (increase agricultural entities to 1.7 million, train 2750 cooperatives in TMX, provide 2750 digital weight scales), provision of inputs, improved extension (add 4,400 additional extension officers), on-farm soil mapping (cover 3 million ha), area under irrigation (cover 1170k ha), warehouses using receipt system (increase to 2750), agro-processing (set up one), export gateways (decrease airport and seaport waiting times to 20-30 min and 2 days, respectively), strategic food reserve (increase to 3 million KT), etc. |
| | **E2. Improve quality of** produce by creating and enforcing standards for storage in warehouses (e.g., community-based rural storage facilities for paddy), post-harvest infrastructure and handling (e.g., affordable pre-cooling, storage, and transport facilities with proper hygiene and temperature control for avocado), with a focus on priority crops (e.g., grading and aflatoxin for wheat) and agronomic practices at farmer or extension level |
| | **E.3 - Ensure fairness and efficacy of contract farming** by developing contract farming templates, standardized contract registry, minimum contract terms, to promote increased production, market access and responsible sourcing |
| | **E.4 - Create market transparency** through various price discovery mechanisms such as a commodity exchange framework, collection and provision of market intelligence on specific commodities, and other means to promote equitable trade |
| | **E.5 - Increase efficiency of export of food crops** through targeted audits of actors and processes that are associated with export gateways and co-creating performance based KPIs that enable improvement of these processes (e.g., time taken to achieve SPS certifications, truck turnaround time at ports) |

## Costing

| | | Government cost, M$ | | | | | | | Private sector cost, M$ | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Component** | **Initiative** | 24/25 | 25/26 | 26/27 | 27/28 | 28/29 | 29/30 | 30/31 | 24/25 | 25/26 | 26/27 | 27/28 | 28/29 | 29/30 | 30/31 |
| **E. Grow agricultural production and exports for cereals and other produce with a focus on maize, paddy, pulses, wheat, sunflower, pulses, soya beans, banana, avocado, cloves** | **E.1 - Orchestrate across flagships with a focus on Agriculture Master Plan targets** | 0.8 | 1.2 | 1.6 | 2 | 2 | 3 | 3 | | | | | | | |
| | **E.2 - Improve quality of produce** | 1.6 | 2 | 3 | 4 | 5 | 6 | 6 | | | | | | | |
| | **E.3 - Ensure fairness and efficacy of contract farming** | 0.4 | 0.6 | 0.8 | 1 | 1.2 | 1.4 | 1.6 | | | | | | | |
| | **E.4 - Create market transparency** | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | | | | | | |
| | **E.5 - Increase efficiency of export of food crops** | 1.2 | 1.8 | 2.4 | 3 | 4 | 4 | 5 | | | | | | | |
| **TOTAL** | | 6 | 9 | 12 | 15 | 18 | 21 | 24 | | | | | | | |

**Risks & Mitigation and Evolution**

| Crop | Risk > Mitigation | Evolution Beyond 2030 |
|---|---|---|
| Cashew nut | Market fluctuations in raw cashew > Export more processed cashew<br><br>Limited investment in processing > Provide incentives for investment and engage with the private sector to understand and unlock barriers | Ability to export more processed cashew, moving away from raw cashew<br><br>A thriving SME ecosystem to process and market cashew products<br><br>Additional value added products (e.g., cashew nut oil, cashew shell cake, cashew husk mulch) |
| Coffee | Price volatility in the global coffee market > Diversify coffee products to include specialty and value-added coffee varieties, targeting niche markets<br><br>Threat of coffee plant diseases and pests > Implement integrated pest management practices | High level of value addition in the country in order to sell roasted coffee as opposed to raw<br><br>Ability to capture premium global markets due to the high level of product grading (moving away from the mixed coffee) and the promotion of regional branding (moving away from selling coffee only as a commodity) |
| Sisal | Market fluctuations in raw sisal > Export more processed sisal<br><br>Inability to increase primary processing to match production growth > Invest in promotion to the private sector and collaborate with them to ensure a conducive business environment and incentives specific to sisal | Growth of secondary processing of sisal to make other products for domestic and export markets (e.g., sisal rope, twine, yarn, cordage, paper, composites, fibreboard, etc.)<br><br>Growth of processing or utilisation of by-products in order to produce additional products such as alcohol and sugars |
| Cotton | Market fluctuations of cotton lint > Move processing of cotton further into high value products for domestic and export markets<br><br>Continued productivity of cotton > Look at investing further in high yielding varieties that are also resilient to currents pests and diseases | Cotton sub-sector able to grow beyond current targets in order to satisfy all the processing capacity and beyond<br><br>Enhancement of processing to create such products as textiles, cottonseed oil and meal, cotton hygiene products, etc. |
| Maize | Lack of coordination and political will to execute interventions > ATO governance and coordination | Enhancement of innovation in agri-extension services (e.g., bundled services) to increase adoption of GAP |

| | | |
|---|---|---|
| | Resource/budget constraints (incl. skilled professionals) > IFPRI model to support recalibration as required<br><br>Limited adoption by farmers > Utilizing the extension and local government systems to drive adoption | Production of few market-led varieties that allow farmers to fetch premium export markets<br><br>Structured market systems to increase price transparency and help farmers receive higher prices |
| Paddy | Climate change risks > Introduce climate-smart agriculture, early warning systems<br><br>Continued lack of enforcement of agronomic best practices > Increased capacity building through extension<br><br>Increased external/imported competition > Use regional blocs for bilateral agreements, investment promotion<br><br>Changes in consumer behaviour > Deploy change management campaigns and monitoring systems | Increased commercial-led production<br><br>Enhanced branding of Tanzanian rice<br><br>Increase in investment (across the value chain), leading to new technologies for seeds,, post-harvest<br><br>Structured market systems<br><br>Coordinated efforts supported through digitalisation to create |
| Kidney bean | Climate, pests and diseases > Introduce CSA practices, new seed varieties, improved infrastructure<br><br>Price volatility due to market dynamics > Promote market diversification, market information systems (MIS)<br><br>Global competition > Improve branding, develop new varieties, enter into bilateral agreements<br><br>Quality seed systems (production and distribution), resulting in unqualified products > Increase capacity of ASA/TOSCI/TARI to do reproduction, develop market information systems | Increased production that will make Tanzania a regional breadbasket<br><br>Structured and well-coordinated market system<br><br>Adoption of advanced technology |
| Pigeon peas | Climate, pests and disease > Introduce CSA practices, new seed varieties, improved infrastructure<br><br>Post-harvest losses > Invest in infrastructure<br><br>Policy issues (e.g., on the quota system) and over-reliance on the | Structured market systems<br><br>Leader in Africa in pigeon pea production/export<br><br>Value addition across the country<br><br>Increased investment in the supply chain (production, processing, value addition) |

| | | |
|---|---|---|
| | Asian export market > Diversify export markets<br><br>Global price volatility > Diversify toward local consumption and the use as protein source after processing | Pigeon pea elevated to a strategic commodity |
| Green gram | Climate, pests and disease > Introduce CSA practices, new seed varieties, improved infrastructure<br><br>Post-harvest losses > Invest in infrastructure<br><br>Policy issues (e.g., on the quota system) and over-reliance on the Asian export market > Diversify export markets<br><br>Global price volatility > Diversify toward local consumption and the use as protein source after processing | Structured market systems<br><br>Leader in Africa in pigeon pea production/export<br><br>Value addition across the country<br><br>Increased investment in the supply chain (production, processing, value addition)<br><br>Green gram elevated to a strategic commodity (given that it can substitute beans and also find a market in the EU and regional AfCFTA markets) |

Risks, mitigations and evolution beyond 2030 for the other crops indicated in this section are covered under the specific commodity pages (including: sorghum, banana, avocado, cloves, tomato, Irish potato, cassava, sunflower, sesame)

**Flagship 7: Remove agriculture-specific regulatory barriers to conducting business (incl. exports), and scale AGCOT* model to 4 corridors as an implementation mechanism for policy changes**

**SAGCOT has been transformed into AGCOT (Agricultural Growth Corridors of Tanzania)*

**Context**

While agricultural business opportunities in Tanzania are numerous, investors note that **initiating and managing agribusinesses is more costly and time-consuming** compared to peer countries, due to several reasons:

- **Land acquisition procedures:** For foreign investors seeking land, it may take 2-3 years to transfer land from village ownership to the Tanzania Investment Centre (TIC), the required step for foreign investors to acquire land without local partners
- **Registration time for critical inputs:** Registering essential inputs like seeds can take up to three years, costing around $15,000—five times more than in Zambia
- **Duplicity of export fees/mandates:** Multiple entities collect fees and are required to issue permits/licenses for exports of specific commodities (e.g., 4 different certifications are required to export the same consignment of red meat)
- **Potentially outdated certification requirements:** Some certifications for export of specific commodities (e.g., tea, coffee) are required by Tanzania, but not importing nations, such as a Certificate of Radioactive Analysis
- **Limited infrastructure to meet certification standards:** Global GAP certification is required for importation of most ag. commodities into European markets, however there is only one certification body in Tanzania today, leading most exporters to hire agents for certification from Kenya (takes up to 1 month and costs ~$4,000)
- **Unpredictability of the business environment:** Unannounced tax/health & safety audits are a repeated concern amongst many investors, and sudden export bans—implemented to meet food reserve requirements—creates significant investment risks.

These challenges are compounded by the involvement of multiple entities in initiating and managing agricultural businesses, with limited coordination mechanisms to address overlaps in mandates and common barriers. In response, three initiatives are underway: **the Blueprint for policy overhaul**, scaling of the **Agriculture Growth Corridor of Tanzania (AGCOT) model**, and recent amendments/ongoing capacity building in the **Office of the Treasury PPP Unit**. The Blueprint is an ongoing policy initiative from the President's Office Planning Commission (POPC) that aims to identify, recommend, and implement policy changes that will lower the time and cost of conducting business in Tanzania, including ag.-specific barriers. AGCOT is a proven public-private partnership model, that takes a cluster- and commodity-based approach to convene critical stakeholders, to build partnerships across the supply chain, and to resolve issues both real-time and through escalation to ensure agribusinesses can operate efficiently. Finally, the PPP unit aims to attract new private sector capital by aligning efforts and coordinating funds across various Government departments, and the government amended the National PPP Act to boost private sector participation (e.g., allows contracting authorities to procure private party participation directly and provides new tax incentives for PPP investors).

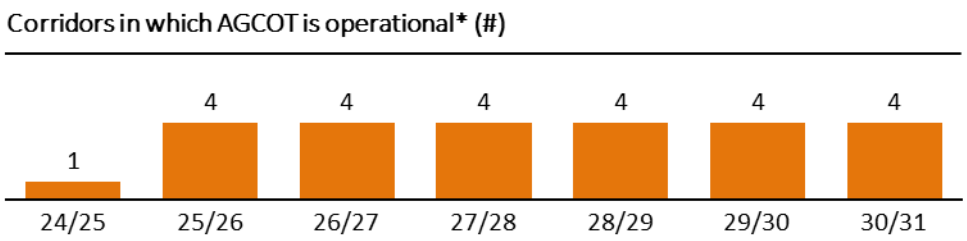
**Objective and KPIs**

By 2030, agribusiness investors can efficiently start and operate businesses aligned with international best practices, equipped with clear guidelines and procedures for exporting products and importing necessary inputs, and without concerns about sudden changes in the business environment disrupting operations. They are well-supported by Government entities/organisations representing their interests, to navigate challenges that may arise while doing business.

Decrease duplicity of mandates in export/ import of priority commodities and inputs, to an avg. of 1 mandate per consignment

Remove certification requirements that are not required by trading partners (e.g., Certificate of Radioactive Analysis)

Increase # of in-country agents/ testing sites to meet ag.-specific export requirements (e.g., for GAP analysis)




*Although AGCOT plans to expand operations to three new corridors next year, operations will start lighter and scale-up over time

**Initiatives**

| Component | Initiative |
|---|---|
| **A. Reduce duplicity of fees/mandates and specific export certification requirements in priority ag. commodities** | **A.1 - Mitigate largest ag.-specific barriers to conducting business through continuation of the Blueprint initiative for policy and regulatory overhaul.** Specific activities will include ongoing review and assessment of commodity-specific requirements/procedures by the Blueprint task force, and recommendations of how to change current guidelines to minimise time/cost of conducting business. Implementation of recommendations will require technical support for relevant entities (including feasibility assessments, strategy support for procedural changes) and in some cases will require judicial review |
| | **A.2 – Establish consistent platform for feedback between private sector and President's Office, by elevating the role of the TNBC Agriculture Working Group,** to ensure that Blueprint policy changes are taking effect. Empower the Ag. Working Group as the primary liaison to gather ongoing feedback, through designation from the President's Office. Ag. Working Group will relay challenges and recommendations to the Blueprint Task Force once per quarter, ensuring a continuous cycle of refinement and updates to Blueprint recommendations |
| **B. Scale AGCOT model to strengthen issue resolution, & streamline brokerage** | **B.1 - Scale AGCOT model to 3 new corridors to continue investment brokerage and provision of tailored supports**. In each new corridor, identify new clusters of agribusiness actors (including companies, specialised suppliers, smallholder groups) and understand greatest needs and opportunities to make businesses run more efficiently. Based on needs/opportunities assessment, deploy tailored support, which could include formation of new partnerships, escalation of issues to relevant government entities, hosting of cross-sector stakeholder convenings, or creation of new compact agreements |
| | **B.2 – Streamline resolution of challenges faced by private sector through establishment of central portal for issue resolution,** that is integrated with existing AGCOT portal and digital channels across other Ministries. Ensure widespread awareness and accessibility of the digital portal to all private sector stakeholders, and house the portal in TIC. During first 1-3 years of roll-out, President's Office and Ag. Working Group could provide oversight to ensure platform is working effectively/ensure that follow-ups for issue resolution are being made |
| **C. Promote deployment of customised PPPs for** | **C.1.- Assess and strengthen capacity and capabilities to customise PPP proposals for agriculture-specific projects.** Evaluate existing capacity of PPP Unit in MoF (including staff, roles, PPP frameworks, project pipeline, targets) and understand what is required to attract additional investment* for ag. projects. |

| | |
|---|---|
| **agriculture-specific projects** | **Evaluation of current capacity and investable projects will also determine target for # of PPPs deployed for ag.-specific projects* |
| | **C.2.- Build capacity for customised leasing and contract agreements for agriculture projects.** Once capacity building efforts have ramped up in C.1., explore opportunities to build out an entity that is dedicated to leasing and contracting agreements, in parallel. Identify options for where entity could sit, its governance structure, and required capacity to meet agreed-upon targets |

**Costing**

| | | Gov cost, M$ | | | | | | | Private sector cost, M$ | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Component | Initiative | 24/25 | 25/26 | 26/27 | 27/28 | 28/29 | 29/30 | 30/31 | 24/25 | 25/26 | 26/27 | 27/28 | 28/29 | 29/30 | 30/31 |
| **A.Reduce duplicity of fees/mandates and specific export certification requirements in priority ag. commodities** | **A.1 - Mitigate largest ag-specific barriers** | 0.7 | 1 | 1 | 0.3 | 0.3 | 0.3 | 0.3 | | | | | | | |
| | **A.2 – Establish consistent dialogue for feedback** | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | | | | | | | |
| **B.Scale AGCOT model to strengthen issue resolution, & streamline brokerage** | **B.1 - Scale AGCOT model to 3 new corridors** | 1 | 2 | 2 | 3 | 3 | 4 | 4 | 4 | 6 | 9 | 11 | 14 | 16 | 16 |
| | **B.2 – Establish central portal for issue resolution** | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | | | | | | | |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **C.1- Strengthen capacity to customise PPP proposals** | 1 | 1 | 1 | 1 | 1 | 2 | 2 | | | | | | | |
| **C. Promote deployment of customised PPPs for agriculture-specific projects** | **C.2.- Build capacity for customised leasing and contract agreements** | | 1 | 1 | 1 | 1 | 2 | 2 | | | | | | | |
| **TOTAL** | | **5** | **5** | **6** | **6** | **7** | **8** | **8** | **4** | **6** | **9** | **11** | **14** | **16** | **16** |

***Note:*** *Exact split for costing of activity B.1 between gov't, dev. partners, and private sector is unknown*

**Risks & mitigation**

- If duplicative fees are successfully removed in the process of streamlining mandates for conducting agribusiness, **lost revenue could be made up for in collection of new fees**, exacerbating the initial challenge of too many fees being collected
    - **Maintain ongoing POPC oversight to ensure that new fees are not suddenly enacted to make up for lost revenue** (even beyond Blueprint implementation), and provide support to relevant entities to understand how lost revenue can be accounted for
- **Policy changes that require institutional review could be delayed or unsuccessful** (e.g., current procedures for transferring land)
    - **Strengthen the case for policy change** via presentation of cost-benefit analyses under different scenarios (e.g., with support from IFPRI), and independent, external review of international best practices

**Post-2030**

- **Scale up ACOT operations in each corridor,** until each agribusiness actor is formally part of an AGCOT cluster (opening up access to commodity compacts, support from AGCOT relationship managers, etc.)
- **Provide additional capacity support to LGAs to amend by-laws** (for regulation of specific commodities, cess collection, harmonisation of clauses, etc.) and ensure consistency of procedures/requirements across LGAs

## Flagship 8: Unlock prerequisites for commercialisation of wheat, soya beans, poultry, aquaculture and fertilisers

### Context

The **acceleration of commercial activities for select commodities** will allow Tanzania to sustainably improve nutrition (poultry, aquaculture, soya beans), decrease undernourishment (wheat), and boost smallholder productivity (fertilizers). However, accelerated commercial activity in each of these prioritized commodities **requires prerequisite support** that must be in place to attract investment from the private sector (e.g., tax breaks for construction of new production facilities, plans for guaranteed offtake).

### Wheat

**Wheat is one of Tanzania's most imported commodities,** with 1.3 million MT imported in 2021/22, representing 96% of total demand. Wheat is a **critical commodity given its importance for national food systems** self-reliance and import substitution. Local production involves the participation of a **wide variety of producers**, from smallholder to large commercial players. The small amount produced locally (only 87,000 MT in 2022/23) suffers from **low productivity** and other challenges. It is hampered by **the lack of improved seed varieties** with the right gluten content, **high production costs**, **inadequate rural storage**, competition from imports, and **climate-related challenges** such as drought and heavy rainfall. However, it is **critical to boost domestic production to ensure a sustainable food supply** across the country. Accelerating commercial wheat activities would help address some of these challenges and **reduce reliance on wheat imports.**

### Soya

**Soya is a critical component of animal feed, which is required to accelerate commercial activities of poultry and aquaculture** (~30% of poultry feed is comprised of soya). However, **Tanzania has low soya bean production**, leading to high rates of importation (~52,000 MT was imported in 2021/2022, or 91% of total demand). Specifically for poultry feed, in 2022/2023, ~37,000 tons of soya beans were required to feed broiler birds, yet overall national production was only ~14,000 tons—both for feed and for human consumption. Low production volumes and high rates of importation are **driving up the price of animal feeds.** Therefore, accelerating commercial activity in soya bean production could help unlock the protein and aquaculture value chains by lowering the cost of feed.

### Poultry

Chicken meat is **significant source of lean protein**, and poultry raising is **significantly less carbon and land intensive** than most other livestock rearing activities. However, per chicken meat consumption is low: per capita consumption is ~1.1 kg, vs. 2 kg in Kenya and 7 kg in Zimbabwe. This low consumption is largely due to the **high price of chicken meat**, which **is fuelled by high chicken feed prices (~70% of the total cost of raising birds).** Nevertheless, high potential exists to scale commercial broiler production **to increase national protein intake in a sustainable manner**, by fostering greater chicken meat consumption through price reduction.

By leveraging the operations of the **largest ~3-5 existing poultry players** and **supporting them with tax breaks for operational scale-up**, Tanzania could more than **double per capita poultry consumption** by 2030.

**Aquaculture**

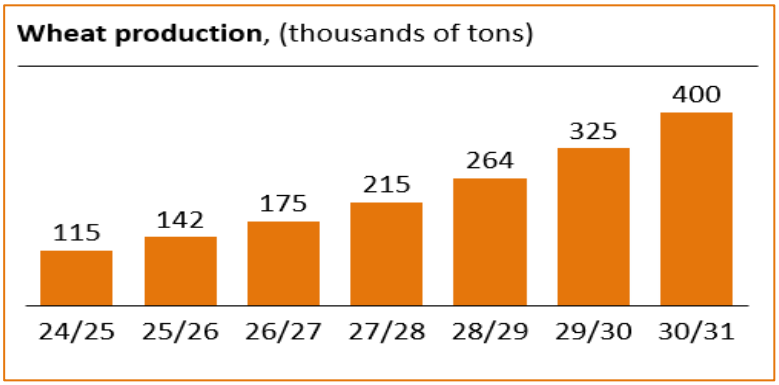
Fish is also a **significant source of lean protein**, and scaling aquaculture development offers a pathway to sustainably boosting protein consumption nationwide. However, the **aquaculture sector is very small** (<0.1% of ag. GDP) but has **high growth potential** with ~58 km² for freshwater and 64k km² for marine areas suitable for aquaculture. **Productivity also** has a **potential to be increased** as production cost of tilapia is estimated at 2.2 to 2.4 USD /kg vs 1.49 USD in Kenya, due to **limited access to inputs**, including **limited supply of feed** (i.e., ~6k tons[1] available vs ~26k tons of demand), **and shortage of quality fingerlings**.

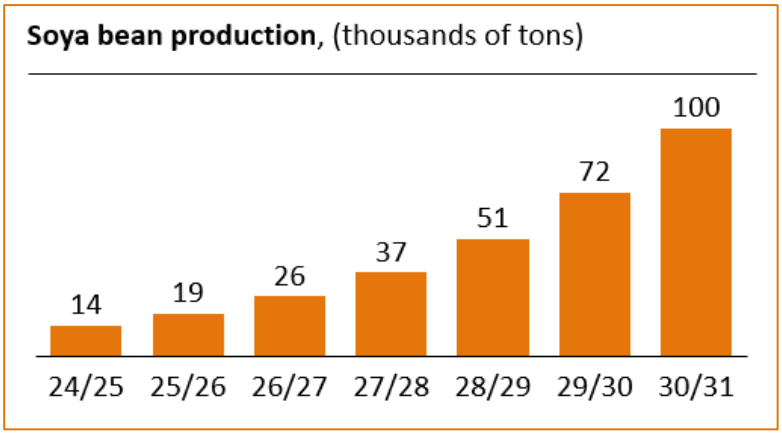
**Fertilizer**

Fertilizers are **critical for crop production**, and a **consistent, domestic supply of fertilizers are required to enable a sustainable food supply**, given the ability of global shocks to disrupt international supply chains. However, today **90%+ of fertilizers are imported,** creating heavy reliance on external market and high prices. Acceleration of commercial activity in fertilizers to **increase access to raw materials** (with a focus on environmentally friendly raw material sources) and to **expand domestic fertilizer blending capacity** would significantly enhance fertilizer security.

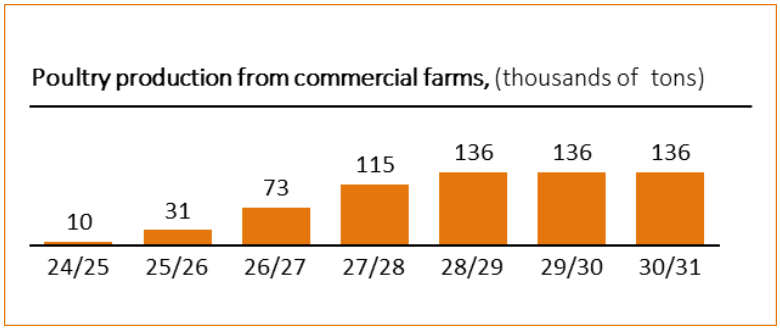
**Objective and KPIs**

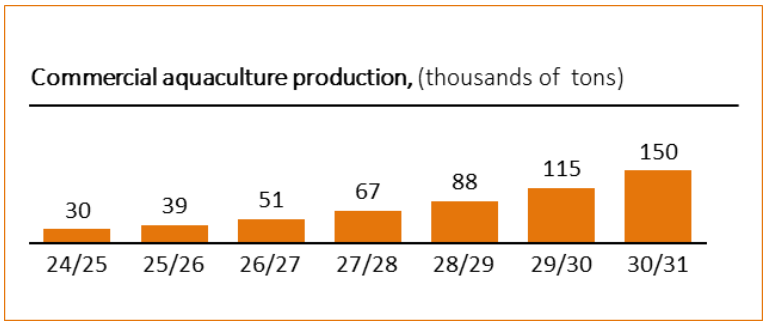
By 2030, commercial production of prioritised commodities will increase by unlocking prerequisites to attract private investment.

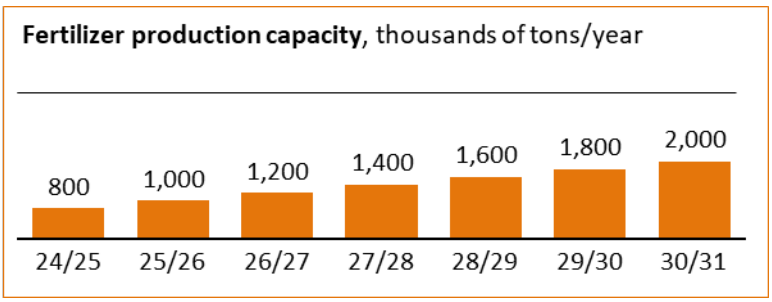





N.B.: 2030/31 targets indicated for wheat and soya bean are for the full potential production, composed of a) the minimum target required to reach 10% growth by 2030 and b) additional opportunity. For more detail on the breakdown, see the specific commodity pages for the two crops.



**Initiatives**

| Component | Initiative |
|---|---|
| **A. Wheat and soya** | **A.1 - Orchestrate land flagship** to identify and allocate up to 200kHa of land for commercial wheat and soya farming |
| | **A.2 - Conduct market-led identification of preferred wheat and soya seed varieties,** coordinate with TOSCI to facilitate certification, importation of seed volume necessary for commercial farming |
| | **A.3 - Support the setting up and initial operations of domestic producers to** drive scale and lower cost of operations, for a pre-determined time window – exact policy vehicle to be determined (e.g., de-risking financing mechanisms, import quotas, targeted subsidies, etc.) |
| **B. Poultry** | **B.1 - Elevate TCPA into primary steering committee, to consistently liaise with gov't on requirements to scale poultry production and assess shifts in consumer preferences**. Dialogue will include exploration of opportunities for government to help de-risk scale-up of commercial poultry production and joint-review of changing consumer demand to inform evolving targets for scale-up (including production quantities and where) |
| | **B.2 – Construct 6 feed mills to produce feed required for breeding stock, DOC, and broiler birds as part of integrated vertical farms.** Once capacity of existing feed mills has been met, construct new facilities to meet requirement of ~500K tonnes of poultry feed/year, to collectively feed ~860K parent stock, 130M DOC, and 130M broiler birds annually. Ensure that each feed mill has capabilities to mix raw materials into different feed compositions, depending on the stage of feeding (e.g., feed starter, feed grower, and feed finisher). |
| | **B.3 - Construct 6 breeder farms and hatcheries amongst existing commercial poultry players, to increase consistent supply of broiler DOC.** Breeder farms will be used to manage ~860K parent stock, and each parent stock will produce an estimated150 DOC over its lifetime of ~44 weeks. Breeder farm facility construction will include sheds, watering, feeding, and egg collection systems. Hatchery facility construction will include temperature-controlled incubators, ventilation systems, and hatching baskets. |
| | **B.4 - Establish and scale commercial broiler farms to produce ~130M tons of broiler chicken meat/year and prepare them for processing.** DOC will be transported to growing facilities, where they will be raised for about 5 weights under strict biosecurity measures and temperature-controlled environments. Once birds reach optimal live weight for slaughter, they will be transported to nearby processing facilities. |

| | |
|---|---|
| **C. Aquaculture** | **C.1 - Implement a stronger regulation framework**, including rigorous environmental management principles for cage culture practices to safeguard against fish diseases and environment degradation, complemented with a robust monitoring system. Implement **certifications** to assess **fingerlings and fish quality standards**. TAFIRI and Aquaculture Development Centres to focus on **breed improvement** and **mass production of quality brood stock for private sector fish hatcheries.** Revitalize the **Tanzania Fisheries Company** (TAFICO)**.** |
| | **C.2 - Develop financial incentives and support** by setting up a one-stop-shop to streamline processes *(Flagship 7)*, offering preferential loans for investors with guarantees, and providing equipment tax and duty relief (e.g., cages) |
| | **C.3 - As a pilot project in Lake Victoria,** promote investment opportunities to attract investors (e.g., feasibility studies including environmental impact, profitability) |
| | **C.4 – Build, rehabilitate, lease existing government facilities** (i.e., hatcheries incl. marine) to commercial players through **Public-Private Partnership (PPP) arrangements** |
| | **C.5 - Replicate the different steps** in Lake Tanganyika, Lake Nyasa, and marine water to scale the model |
| **D. Fertilisers** | **D.1 – Determine imported raw material requirements and increase to them.** These materials include urea/ammonia (temporarily, dependent on D5), DAP and mineral of potash/potash chloride by removing administrative bottlenecks associated with importation e.g., operational, financial (forex), etc. |
| | **D.2 – Determine domestically available raw material requirements, increase access to them and conduct feasibility study on the extraction/sourcing.** These materials include phosphate, lime/dolomite, gypsum, organic waste to ensure there is sufficient supply and access for scaling of blending capacity in the country. |
| | **D.3 – Review policies, for fertiliser pricing, export/import permits, the subsidy programme to level the playing field and further increase transparency.** The focus would be to stimulate domestic production, enable local production to become competitive, increase pricing transparency, increase adoption, access to locally available high-quality fertiliser at low cost, ensuring fertiliser security, and enable exports |
| | **D.4 – Secure investments to expand fertiliser blending capacity in the country.** This is supported by efforts in D1-D3, decision on investment needs (e.g., number of plants, type, etc.) which would inform the type investors to target (e.g., risk appetite, regional focus/experience, etc.). The approach for targeting could include |

| | |
|---|---|
| | collaborations with e.g., AGRF, Manufacture Africa to set-up deal rooms and linkages to investors. These efforts would be backed-up by detailed fact packs or pitch decks |
| | **D.5 – Conduct feasibility study on the production of (grey, blue or green) ammonia in the country focusing on the most environmentally friendly raw material sources** including natural gas, by-product of cobalt/nickel extraction, or electrolysis. This is also to be assessed based on environmental impact, pricing, ability to attract capital, adoption by farmers, business model for Tanzania's context, demand and coordination with sectorial ministries (e.g., Ministry of Energy), competitiveness of the sector to inform import vs. produce decision |
| | **D.6 – Secure investment in ammonia production leveraging resources in the country** to realise urea, ammonium sulphate, or ammonium phosphate, etc., depending on the path selected in D5 including implementation of policies to ensure investment profitability and viability to serve the domestic and regional markets |

**Costing**

*Note:* In costing table below numbers in parentheses *(X)* under Gov costs indicate tax breaks

| | | Gov Cost, M$ | | | | | | | Private Sector Cost, M$ | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Component** | **Initiative** | **24/25** | **25/26** | **26/27** | **27/28** | **28/29** | **29/30** | **30/31** | **24/25** | **25/26** | **26/27** | **27/28** | **28/29** | **29/30** | **30/31** |
| **A. Wheat and soya beans** | **A.1- Identify land for wheat and soya farming** | 1 | 1 | 2 | 2 | 2 | 3 | 3 | | | | | | | |
| | **A.2- Identify preferred seed varieties** | 0.4 | 1 | 1 | 1 | 1 | 1 | 2 | | | | | | | |
| | **A.3- Support initial operations** | 1 | 1 | 2 | 2 | 2 | 3 | 3 | | | | | | | |
| | **TOTAL** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | | | | | | | |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **B.1 - Elevate TCPA into primary steering committee** | | | | | | | | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| | **B.2 - Construct 6 feed mills** | | *(2)* | *(3)* | *(3)* | *(2)* | | | | 9 | 18 | 18 | 9 | | |
| **B. Poultry** | **B.3 - Construct 6 breeder farms and hatcheries** | | *(4)* | *(9)* | *(9)* | *(4)* | | | | 24 | 48 | 48 | 24 | | |
| | **B.4 - Establish and scale commercial broiler farms** | | *(2)* | *(4)* | *(4)* | *(2)* | | | | 10 | 20 | 20 | 10 | | |
| | **TOTAL** | | ***(8)*** | ***(16)*** | ***(16)*** | ***(8)*** | | | | **43** | **86** | **86** | **43** | **0.1** | **0.1** |
| | | | | | | | | | | | | | | | |
| | **C.1- Implement a stronger reg. framework** | | 0.5 | *0.5* | | | | | | | | | | | |
| | **C.2- Develop financial incentive and support** | | | 1 | 1 | 1 | 1 | 1 | | | | | | | |
| **C. Aquaculture** | **C.3-Pilot project in Lake Victoria** | | | 0.6 | 0.8 | | | | | | 6 | 8 | | | |
| | **C.4- Lease existing** | | | 1 | 1 | 1 | | | | | | | | | |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **gov't facilities** | | | | | | | | | | | | | | |
| | **C.5- Replicate steps in Lake Tangyanika** | | | | | | 1 | 3 | | | | | | | |
| | **TOTAL** | | **1** | **4** | **2** | **2** | **2** | **5** | | | **6** | **8** | | | |
| **D. Fertilizers** | **D.1 – Increase access to raw materials** | 0 | 1 | 1 | | | | | | | | | | | |
| | **D.2 – Conduct feasibility study** | 0.3 | | | | | | | | | | | | | |
| | **D.3 – Review policies, for fertiliser pricing** | 0.1 | 0.1 | | | | | | | | | | | | |
| | **D.4 – Expand fertiliser blending capacity in the country** | *(54)* | *(76)* | *(97)* | *(108)* | *(108)* | *(108)* | *(108)* | 150 | 60 | 60 | 60 | 60 | 60 | 60 |
| | **D.5 – Conduct feasibility study on environmentally friendly sources** | 0.0 | 0.5 | 0.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | **D.6 – Secure investment in** | Depends on D5 | | | | | | | | | | | | | |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **ammonia production** | | | | | | | | | | | | | |
| | **TOTAL** | **0.4** | **1 *(76)*** | **1 *(97)*** | ***(108)*** | ***(108)*** | ***(108)*** | ***(108)*** | **150** | **60** | **60** | **60** | **60** | **60** | **60** |

**Risks & mitigation**

Wheat and Soya

- **Delayed price competitiveness** > consistently monitor market prices including **major cost drivers of local production,** to identify pathways for improved price competitiveness
- **Limited support to attract new private sector capital** > **assess opportunities for additional supports** by speaking with potential investors and exploring case

Poultry

- **Slow/limited increase in consumer preferences for more broiler chicken meat**> consistently assess shifts in consumer preferences vs. price changes (between TCPA and MLF), before deciding how much to scale up commercial broiler production
- **Delayed productivity improvements in maize/soya for lower-cost poultry feed** > Explore and deploy additional supports to private sector for lower feed costs (e.g., tax breaks on imported raw materials*)

Aquaculture

- **Market volatility** as commercial production increases > **Diversify markets** and develop future contracts to stabilise prices
- Sudden **disease outbreaks** > Rely on **Early Warning Systems** and develop rapid response protocols

Fertiliser

- **Inability to secure investment for ammonia production** > Gov and investors need to **collaborate closely to ensure interest are covered**
- **Uncompetitive price** of locally produced fertilisers > **Details assessment** to determine profitability and close collaboration with gov't and investors

**Post-2030**

- Across all commodities, **scale up production according to changing market environment,** including changing consumer preferences and feed requirements
- Across all commodities, **continue to explore new opportunities** for **regional/international export**
- In each commodity, explore opportunities/latest ag. technologies to **improve sustainability of operations**

**Flagship 9: Develop warehouses and market linkages, one agro-industrial processing cluster and specific commodities processing infrastructure**

**Context**

Current **value of agro-processing is estimated at $1.5 Bn** in Tanzania, due to lack of **warehouses and market linkages, agro-industrial processing cluster and specific commodities processing infrastructure**:

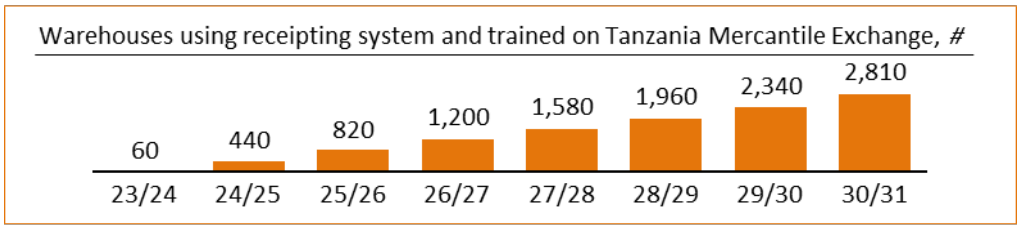
- **Storage infrastructure** in Tanzania is **inadequate**, with only **~2% of needs covered by improved warehouses, i.e., licensed by Tanzanian warehouse licensing Board**[118] (i.e., 60/2750). The process for procuring raw materials through traditional auctions is often **opaque and inefficient**, preventing farmers from accessing **fair prices**.
- Additionally, there is currently **no agro-industrial processing cluster**, even though they would allow to focus on large-scale agricultural production, processing, and technological integration to enhance the agricultural value chain. The Export Processing Zones Authority (EPZA) offers the possibility to invest in **Special Economic Zones** (Central Government, Local Government, Private) projects with incentives.
- The infrastructures to process the following commodities are also **insufficient:**
    - **Cashew**: **only 10% to 20% of the 250k MT of raw cashew nuts produced per year are processed**, i.e., 25 to 50k MT. For years, **80 to 90%** of the national harvest has been **exported** to **India** for processing, but in the last decade, **Vietnam** also began the purchase of Tanzanian cashew nuts. Because of the low capacity to process raw cashew nuts, Tanzania lost **USD 85 Mn for exporting raw cashew nuts in the 2020/21 season instead of kernels**, also impacting **~63k jobs** that could have been created.
    - **Sisal**: there is a processing **capacity shortfall of 20k MT**, i.e., **50k MT processing capacity versus production of 70k MT produced per year** expected to increase in the future, i.e., 120k MT estimated to be produced from 2025. There are **only 54 decorticators** in Tanzania, mostly old and functioning at low efficiency.
    - **Poultry**: Poultry raising is the most common livestock-keeping activity, with **more than 4.3M households owning chickens across Tanzania**. However, the **absence of government-supported processing facilities** severely limits smallholder chicken farmers, particularly those in **cooperatives**, from engaging in **commercial-scale operations and increasing their revenue**. Indeed, this gap hinders their ability to access broader markets and comply with stringent quality and safety standards. Moreover, there is a high potential for **large scale commercial broiler production** *(covered in flagship 8)* and hence **processing**.
    - **Fisheries**: Only **~2% of fish landing sites** (i.e., 33/1375) are equipped **with necessary handling facilities for fish landing.** Moreover, **aquaculture production** is expected to increase from 30k MT in 2023 to 150k MT in 2030, presenting significant opportunities for **processing**. One of the specific aquaculture opportunities is **seaweed** as Tanzania is responsible for **92% of African production**, making it the continent's top producer. Seaweed farming is the country's third largest industry primarily run by women who make up 80% of the 30,000 farmers the industry employs. However, there is **no seaweed processing factory** in Tanzania mainland.

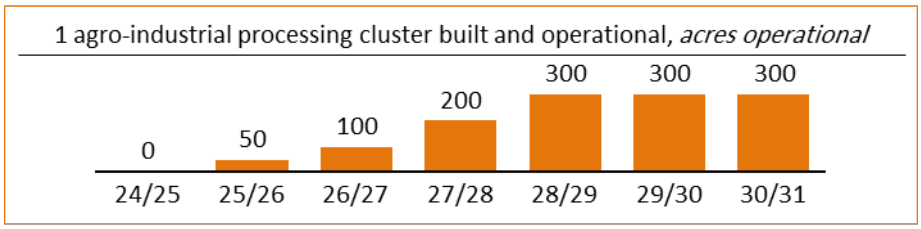
[118] The Warehouse Receipts System denotes a kind of trade by which commodities are stored in a Licensed Warehouse(s), the owner of the commodity receives Warehouse Receipts which certifying the title of deposited commodities as of specific ownership, value, type, quantity and quality (grades).

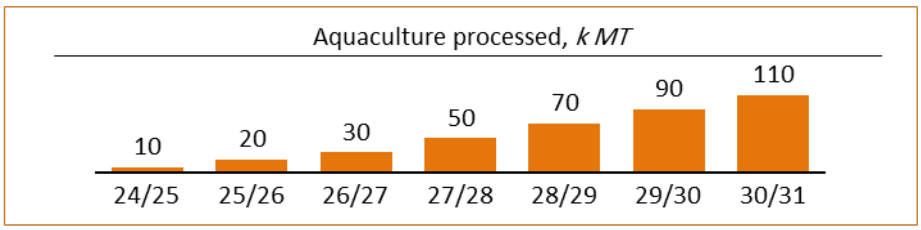
- **Dairy**: Only **3% of milk is processed in Tanzania today**. The capacity of current processing facilities is only ~800K litters per day, however processing capacity of 2 million litters/day (i.e., ~700 million litters annually) is required to get to 10-15% processing rates by 2030. Therefore, there is an **additional processing capacity of ~1.2 million litters per day** needed by 2030.
- **Packaging**: Export markets such as the UK or the EU require packaging materials to be certified and tested, but most of these **materials are not found locally and must be imported**, increasing production costs. One example of requirements is to minimize the volume/weight of packaging while meeting safety/hygiene targets.

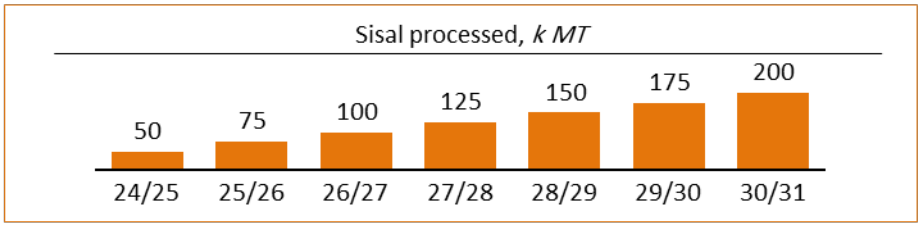
**Objective and KPIs – *incremental growth***

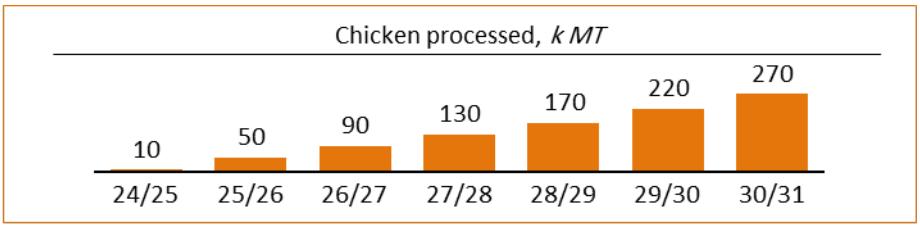
By 2030, value of agro-processing has potential to increase from $1.5 Bn to $3 Bn by developing **warehouses and market linkages, building one agro-industrial processing cluster and specific commodities processing infrastructure:**

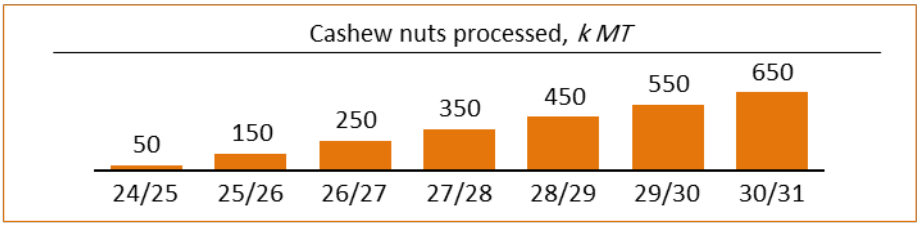


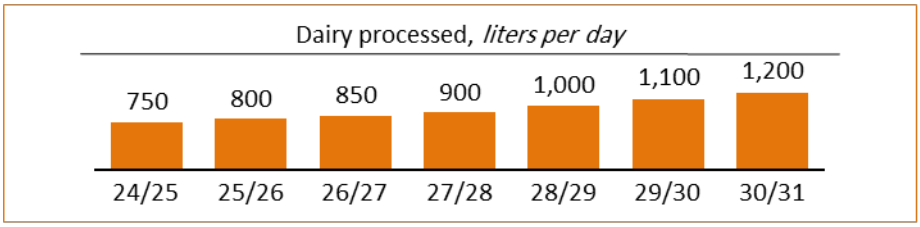




Chicken processed, *k MT*
10
50
90
130
170
220
270
24/25
25/26
26/27
27/28
28/29
29/30
30/31


Cashew nuts processed, *k MT*
50
150
250
350
450
550
650
24/25
25/26
26/27
27/28
28/29
29/30
30/31


Dairy processed, *liters per day*
750
800
850
900
1,000
1,100
1,200
24/25
25/26
26/27
27/28
28/29
29/30
30/31

**Initiatives**

| Component | Initiative |
|---|---|
| **A. Increase warehouses and market linkages between farmers and processors/ traders** | **A.1- Warehouse Receipt Regulatory Board** to establish 2,750 warehouses by building **1,510** (55%) **reliable and strategically located warehouses**, particularly in areas close to farmers:<br>- Identify **key agricultural regions** for cashew nuts, peas, soya beans, coffee, sesame and cotton, poultry and meat production and forecast the need for warehousing facilities<br>- Partner with **financial institutions** (e.g., NMB) to provide support for the implementation of warehouse systems<br>- Collaborate with **cooperatives** to increase awareness and to ensure farmers' participation and engagement in the warehouse receipt system |
| | **A.2 –** The remaining **45% warehouses (i.e., 1,240 warehouses) to be established** are **existing warehouses** that will be **rehabilitated.** The **2,750 warehouses** – including the ones **built from scratch and the rehabilitated** - will be **provided with a digital weight scale** (i.e., 50% with a full set weight scale and 50% with a weighbridge platform) to ensure a **seamless and transparent** process for procurement of raw materials by **tracking crops from the warehouse to auction.** This is to include a receipt system that captures and transfers weight information digitally, ensuring traceability/transparency and preventing crop spoilage. |
| | **A.3 - Conduct training workshops** for cooperatives and warehouse systems on **Tanzania Mercantile Exchange (TMX)**, which is the first commodity exchange in Tanzania. The exchange is established to provide a platform where farmers, traders, exporters, and other various market actors can access domestic and global markets and obtain a fair price in selling or buying of commodities. Training workshops will focus on:<br>- Raising awareness on the benefits of **using Tanzania Mercantile Exchange** (instead of traditional auction methods), i.e., **auction process streamlined** with a system **bridging the gap** between farmers, cooperatives, and buyers, **fostering a more organised and effective trading environment.**<br>- Building capacity on **procedures** to use Tanzania Mercantile Exchange. |
| **B. Develop an agro-industrial** | **B.1 –** Build a team to conduct a **targeted needs assessment to identify financial investors, build trust and attract them** by designing tailored incentives, in collaboration with **Tanzania Investment Centre (TIC)**. The initiative aims to unlock key processes, |

| | |
|---|---|
| **processing cluster** | attract investment through a **transparent matchmaking system** and proactive issue resolution. |
| | **B.2 – Collaborate with private investors identified by providing operational support and economic and fiscal incentives** to ensure effective operations within these zones, e.g.,<br>- Streamline the licensing process, making it easier for new entrants to set up processing units – *tackled in ease of doing business flagship*<br>- Provide economic and fiscal incentives, e.g.,10-to-15-year income tax exemption, export tax exemption for export products, duty-free imports on capital goods and accessories, construction materials and all raw materials, subsidised energy rates to reduce operational costs |
| | **B.3 – Support the infrastructure construction** of the agro-industrial processing cluster. The aim is to focus on large-scale agricultural production, processing, and technological integration to enhance the agricultural value chain. Government is responsible for **building infrastructure allowing to provide day-to-day operational support** through cold storage units, quarantine facilities, quality control laboratories, sorting and grading services and **implementing sustainable waste treatment** through sewage treatment plant. |
| **C. Specific commodity processing** | **C.1 – Provide incentives for medium-sized processing enterprises**, e.g., provide subsidised energy rates to reduce operational costs, implement tax incentives for industrial investments, remove VAT on packaging materials and new technologies. Incentives should be defined and tailored through a **targeted needs assessment led by Tanzania Investment Centre (TIC).** |
| | **C.2 – Sisal: set up 45 decorticators and brushing machines** to have an additional **150k MT processing capacity** by 2030, while ensuring accessibility from farmers and warehouses locations - including 15 in Tanga, 2 in Shinyanga, 2 in Mara, 1 in Kilimanjaro, 2 in Coast, 1 in Singida, 4 in Morogoro and 1 in Simiyua**. 40 decorticators** aimed to be **financed by the private sector** including 5 AMCOs and **5 by the government, i.e., Sisal Board** (with 3 in Tanga, 1 in Simiyu and 1 in Morogoro). |
| | **C.3 – Cashew nuts:** establish an industrial park at **Maranje in Mtwara** region to have a **processing capacity of 600k MT by 2030**. The park will be funded by **Arise company and the Government of Tanzania** to process current production from tradition regions as well as additional production from arid and semi-arid regions, including Dodoma, Singida, Kigoma, Morogoro, Iringa, Shinyanga, Tabora, Katavi, Mbeya, Songwa and Njombe. |
| | **C.4 – Chicken: set up 6 commercial processing facilities** and **6 government-led processing facilities for Small Holder Farmers in cooperatives** to increase their **productivity and market access.** Aim |

| | |
|---|---|
| | is to have a **processing capacity of 260k MT by 2030.** Pilots should focus on priority regions: **Iringa, Dar es Salaam and Kilimanjaro.** |
| | **C.5 – Fisheries:**<br>- **Upgrade fish handling infrastructure (e.g., landing sites) including for dagaa:** MLF and LGAs to upgrade/construct fish infrastructure including landing sites, markets, warehouses, and storage facilities, with coordination, technical and financial support from FAO and Development partners<br>- **Set up 5-10 processing facilities to process 100k MT of aquaculture, mainly for tilapia but also one for seaweed.** Seaweed market is expected to grow at a CAGR of 10.5% until 2030. It can be used for cosmetics, animal feeds, biofuels, pharmaceuticals, and nutraceuticals. A seaweed factory costs 3 Mn USD and can process 30k MT annually. |
| | **C.6 – Dairy: establish 10-15 facilities to increase processing capacity by ~1.2 million litres per day**. Current dairy processing facilities capacity is ~800k litres/day but utilisation is ~40%; maximise utilisation in these facilities before constructing new ones. Increasing levels of dairy processing to ~10% would reduce health risks and substantially enhance nutritional quality. Private sector can invest in additional milk collection centres and processing facilities. **Pilot** could focus on these priority regions: **Arusha, Tanga, Mbeya** |
| | **C.7 – Packaging: establish one processing factory.** Private sector can invest in production of packaging materials/assembly of packages to meet specific export requirements. As an illustration, ~21% of exports go to the EU today, projected to reach ~$1B in 2030. |

## Costing

| | | Gov Cost, M$ | | | | | | | Private Sector Cost, M$ | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Component** | **Initiative** | **24/25** | **25/26** | **26/27** | **27/28** | **28/29** | **29/30** | **30/31** | **24/25** | **25/26** | **26/27** | **27/28** | **28/29** | **29/30** | **30/31** |
| **A. Warehouses and linkage between farmers and processors** | **A1. Establish 1500 reliable and strategically located warehouses** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 25 | 25 | 25 | 25 | 25 | 25 |
| | **A2. Rehabilitate existing warehouses, and provide 2,750 digital weight scales** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 23 | 23 | 23 | 23 | 23 | 23 |
| | **A3. Conduct training workshops for cooperatives and warehouse systems on Tanzania Mercantile Exchange (TMX)** | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 2 | 2 | 2 | 2 | 2 |
| **B. Agro-Industrial Processing Cluster** | **B1. Conduct a targeted needs assessment to identify financial investors, build trust and attract them** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | **B2. Provide operational and financial support** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | **B3. Construct Agro-Industrial Processing Cluster** | 0 | 38 | 38 | 39 | 0 | 0 | 0 | 0 | 113 | 113 | 117 | 0 | 0 | 0 |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **C. Specific commodity processing** | **C1. Provide incentives for medium-sized processing enterprises** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** |
| | **C2. Sisal: set up 45 decorticators (40 private and 5 public)** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **2** | **2** | **3** | **3** | **3** | **3** | **2** |
| | **C3. Cashew nuts: establish an industrial park** | 0 | 0 | 0 | 19 | 19 | 20 | 0 | 0 | 0 | 0 | 19 | 19 | 20 | 0 |
| | **C4. Chicken: set up 6 commercial and 6 government-led processing facilities** | 0 | 4 | 8 | 8 | 4 | 0 | 0 | 0 | 4 | 8 | 8 | 4 | 0 | 0 |
| | **C5. Fisheries: set up 10 processing facilities, incl. seaweed and upgrade fish handling infrastructure** | **0** | **0** | **0** | **0** | **2** | **2** | **0** | **0** | **0** | **3** | **3** | **6** | **6** | **6** |
| | **C6. Dairy: establish 10-15 facilities** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **6** | **6** | **6** | **6** | **6** |
| | **C7. Packaging: establish one processing factory** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 |
| | **TOTAL** | **0** | **43** | **49** | **69** | **28** | **24** | **2** | **2** | **170** | **184** | **206** | **89** | **85** | **65** |

**Risks & Mitigation**

- The expansion of agro-processing clusters poses a **risk to biodiversity** through habitat disruption, pollution, and resource depletion. To mitigate this, **comprehensive environmental impact assessments** must be conducted before the approval of any new projects. These assessments should evaluate the potential **effects on local ecosystems** and propose strategies to **minimise negative impacts on biodiversity**. Measures might include the **preservation of natural habitats, the implementation of sustainable resource management practices, and the integration of biodiversity conservation** into agro-industrial planning.

- Another significant risk in the agro-processing industry is the **generation of waste**. To address this, investment in **waste-to-energy technologies** is recommended. These technologies can convert organic waste from agro-processing into renewable energy, reducing environmental impact and providing a secondary stream of revenue.

- The fast pace of technological advancement can render **fixed systems obsolete**. To counter this, there is a need to invest in flexible technology solutions that can be **easily upgraded or adapted**. This flexibility will allow agro-industrial clusters to stay abreast of the latest advancements in processing technologies, thus maintaining their operational efficiency and market relevance.

**Post-2030**

- Beyond 2030, the agro-industrial sector should aim to integrate **advanced technologies** such as **Artificial Intelligence (AI), Internet of Things (IoT), and machine learning** to further enhance the capabilities of processing clusters. These technologies can optimise production processes, improve supply chain management, reduce waste, and facilitate real-time decision-making.

- The vision for the future involves **expanding the network of interlinked agro-based processing corridors**. This expansion aims to amplify regional trade by creating a cohesive infrastructure that supports the movement of goods, services, and information. In the long term, this network will evolve into a **national system of interlinked corridors**, magnifying the benefits throughout the country by boosting trade, improving access to markets, and fostering economic growth.

**Flagship 10: Increase regional and international export to $6Bn by enhancing cold chain, airport and seaport capacity and efficiency, including processes**

**Context**

The **export value** stands at **$1.2 Bn in 2023** with vegetables accounting for the bigger share (83%), fish exports for 8% and other perishables exports including fruits (7%), meat (1%) and flowers (0.6%), impacted by **lack of cold chain and export infrastructure**[119]:

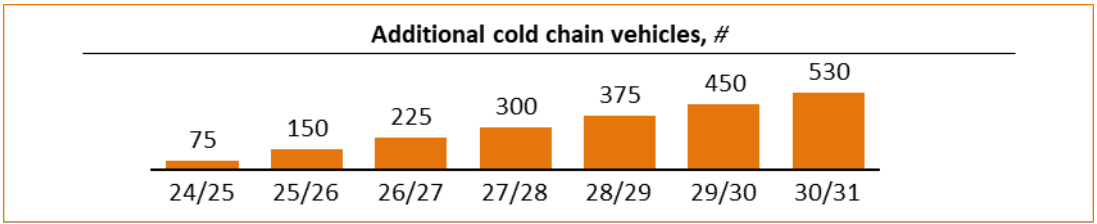
- **Cold chain facilities** are either not **available** (e.g., cold storage for horticulture and meat) or **inadequate** (e.g., insufficient adherence to sanitation measures in abattoirs), coupled with **incomplete compliance with Sanitary and phytosanitary measures** (SPS), e.g., sesame seeds or oil not always adhering to purification requirements
- Airfreight export of 11,200 MT annually for Tanzania vs 330,000 MT for Kenya and 289,000 MT for South Africa[120] due to:
    - **Insufficient infrastructure at export hubs**: i) **Airports: Kilimanjaro International Airport (JRO) and Julius Nyerere International Airport (JNIA)** have **inadequate handling facility** with single operator limiting competition and innovation while **Jomo Kenyatta International Airport (JKIA) in Kenya** has modern and several perishable handling facilities which offers value added services such as **rapid cooling, skid rebuilding, cargo wrapping, multi truck offloading deck**. Also, some of the Tanzanian fresh produce exporters have their **sister companies in Kenya** and therefore prefer consolidating their produce in Kenya where there is more load and ship them to their clients overseas. Moreover, **Mwanza Airport's cold room doesn't meet required standards**, suggesting problems with its design affecting exporters' needs. **Songwe Airport lacks a cold room**, hindering its capability to handle perishables. KIA and JNIA have **outdated or inadequate cold rooms**, signalling a need for upgrades to meet current and future demands for perishable goods transport., ii) **seaports**: Dar es Salaam port has **limited plugs for reefer containers**, i.e., 160 versus 1,836 in Kenya and 1,400 in South Africa so shippers are reluctant to place reefer containers to the port. Moreover, **loading machinery** is sometimes **inadequate**. Dar es Salaam port only has one entry gate catering for exports, and so no preferential treatment for perishable exports, versus a capacity of 53,000 sqm and 12,432 cold storage slots in South Africa for instance
    - **Operational inefficiencies**: there are reliability issues with 1-2 h offloading times at JNIA vs 30 min at JKIA. Inefficiency at Dar es Salaam port also makes shipping lines unable to guarantee departure time. The average waiting time to berth at Dar es Salaam port is between 4 and 12 days, while in Mombasa it is hardly 2 days with some occasions' where vessels berth on arrival
- **Inefficient export processes:** inefficiency of export processes, characterized by **lengthy and opaque documentation requirements**, including gathering invoices, obtaining Taxpayer Identification Number (TIN) certificates, and securing export certifications. These requirements lead to slow clearance times, making the export process inefficient and placing Tanzanian businesses at a disadvantage in global markets.

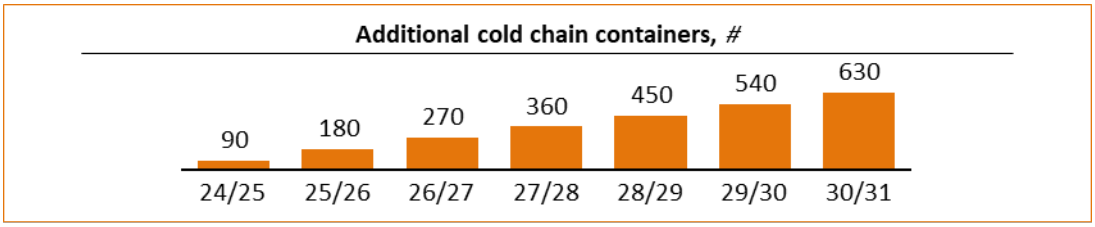
[119] Focus on JNIA, KIA, Songwe Airport, Mwanza Airport and DSM port

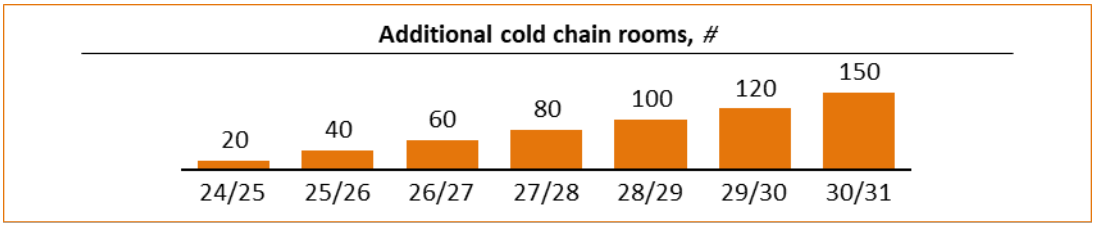
[120] Source: Comparative study on ports logistics for perishable exports (TAHA), used for different references in this flagship

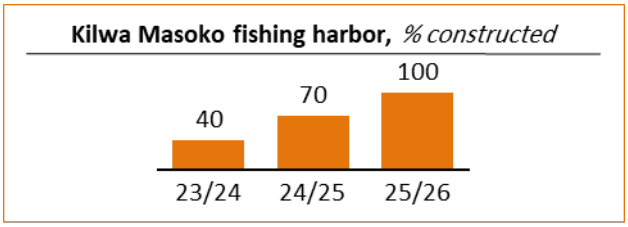
**Objective and KPIs**

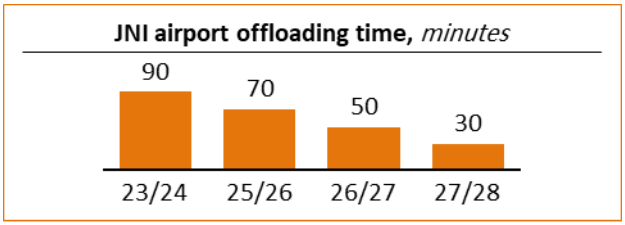
By 2030, there is an opportunity to increase regional and international export to $6Bn by enhancing cold chain, airport and seaport capacity and efficiency, including processes.



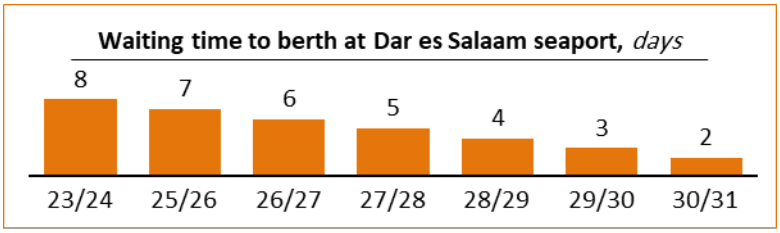



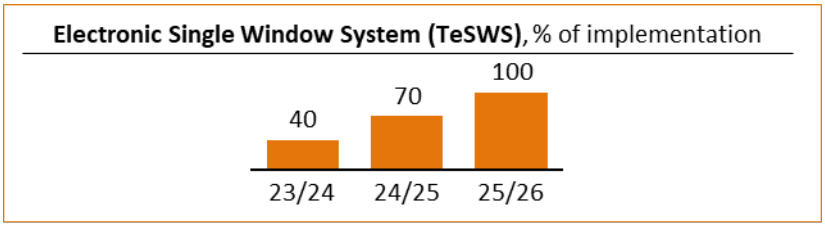




**Infrastructure improved**: **i) airports:** cold room upgraded in Mwanza and built in Songwe ; handling facilities for perishable produce, ii) **seaports**: plugs and loading equipment






**Initiatives**

| Component | Initiative |
|---|---|
| **A. Cold chain infrastructure for red meat, poultry, dairy, fisheries, horticulture** | **A.1 –** Enhance **market structure, transparency and traceability** by **setting/enforcing standards** (e.g., transport, conservation), e.g., COPRA for cereals, Tanzania Meat Board (TMB) for meat, Tanzania Dairy Board (TDB) for dairy |
| | **A.2 –** Promote **construction of cold chain facilities** through the private sector, as an emerging opportunity and **introduce incentives such as tax breaks for private-sector to invest in refrigerated vehicles** |
| | **A.3 - Introduce incentives such as tax breaks for private-sector to invest in refrigerated storage containers and cold rooms** |
| **B. Seaport and airport infrastructure, i.e., capacity and operations** | **B.1 – Develop advanced infrastructure for export gateways:**<br>• **Seaport:** Increase number of **plugs for reefer containers** and **upgrade loading equipment**<br>• **Airport:** Redesign the **cold room facility at Mwanza airport** to the required aviation industry standards to make it usable by exporters, carry out **feasibility and design for construction and installation of cold room facility at Songwe airport** in accordance to industry standards and demand assessment, upgrade and/or rehabilitate the existing **cold rooms at KIA and JNIA** to meet the current and medium-term demand of all perishable product. Provide special landing, parking and other fees to cargo freighter operators to incentivize freighter operations at local airports |
| | **B.2 – Implement expedited services and specific handling facilities for perishables:**<br>• Implement a **dedicated centre for expedited services for fresh produce at major airports and seaports**, focusing on faster clearance and quality checks for exports. Enable **speedier delivery of perishable shipments for shippers and reefer vessels** through evidencing on the preference of handling perishables and their specific documentation process. Manage the port entrance through the Port Authority by establishing both a **system that will control the inlet and outlet of vehicles through priority to perishable shipments** against ordinary cargo. |

| | |
|---|---|
| | • Offer **perishable handling facilities** offering value added **services** such as rapid cooling, skid rebuilding, cargo wrapping, multi truck offloading deck. |
| | **B.3 –** Construct **fishing harbour** at **Kilwa Masoko** in **Lindi region**, with a capacity to handle **~60k tonnes of fish** per year. Harbour will be 314 meters long with ability to serve three 107 meters long vessels or four 65 meters long vessels at a time. |
| | **B.4 –** Continue and enhance implementation of the **Electronic Single Window System (TeSWS)** to allow trade stakeholders to **interface electronically**. Single window solutions allow trade stakeholders to interface electronically, submitting and distributing documents including customs declarations, import/export permit applications, trading invoices and certificates of origin to accelerate and secure the supply chain. |
| **C. Export processes efficiencies to improve customs speed/experience/reliability** | **C.1 – Provide capacity building for law enforcers** (e.g., TRA, Police, Immigration) **and actual players** (e.g., transporters, farmers/ producers, logistics companies) **on perishable products value chain and handling** |
| | **C.2 –** Build a team to **i) conduct export market researches** and ensure coordination with extension services and trade agreements**,** ii) build and implement **actionable guidelines for adhering to Sanitary and Phytosanitary Standards (SPS) agreements** |

## Costing

| | | Gov Cost, M$ | | | | | | Private Sector Cost, M$ | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Component** | **Initiative** | **24/25** | **25/26** | **26/27** | **27/28** | **28/29** | **29/30** | **30/31** | **24/25** | **25/26** | **26/27** | **27/28** | **28/29** | **29/30** | **30/31** |
| **A. Cold chain infrastructure** | **A.1 – Enhance market transparency and traceability through standards** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | **A.2 - Introduce tax breaks for private-** | 0 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 9 | 10 | 10 | 9 | 7 | 0 |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **sector to invest in refrigerated vehicles** | | | | | | | | | | | | | | |
| | **A.3 - Introduce tax breaks for private-sector to invest in refrigera-ted storage containers** | 0 | 7 | 8 | 8 | 7 | 5 | 0 | 0 | 30 | 35 | 35 | 30 | 25 | 0 |
| **B. Seaport and airport infrastructure, i.e., capacity and operations** | **B.1 - Infrastructure of seaports and airports** | 0 | 15 | 15 | 15 | 15 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | **B.2 - For perishables implement a dedicated centre and offer services** | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | **B.3 - Construct fishing harbour at Kilwa Masoko** | 33 | 33 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **C. Export processes efficiencies to improve customs speed/experience/ reliability** | **C.1 - Continue the implementation of the Electronic Single Window System (TeSWS)** | **0** | **0** | **1** | **1** | **1** | **1** | **1** | **0** | **0** | **0** | **0** | **0** | **0** | **0** |
| | **C.2 - Provide capacity building for law enforcers on perishable products handling** | **0** | **0** | **1** | **1** | **1** | **1** | **1** | **0** | **0** | **0** | **0** | **0** | **0** | **0** |
| | **C.3 - Do export market research and build and** | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **implement SPS guidelines** | | | | | | | | | | | | | | |
| | **TOTAL** | **33** | **57** | **29** | **29** | **27** | **25** | **3** | **0** | **38** | **45** | **45** | **38** | **32** | **0** |

**Risks & Mitigation**

- The challenge of operating within a **dual economy** - one that features both modern, globalised markets and traditional, local markets - can lead to **disparities** in economic benefits. To ensure that consumers gain from **global market integration**, policies must be structured to **facilitate equitable access to the benefits of expanded export capacity**. This includes implementing measures that stabilise prices and improve product quality and variety. Additionally, it is essential to develop infrastructure and services that support **local producers**, enabling them to meet export standards and access international markets, thus ensuring that the economic gains from trade are passed on to consumers through competitive pricing and improved access to goods.

- **Market dynamics** are continually evolving, often driven by changes in international standards and consumer demands. To keep pace, **policies governing export processes must be flexible and adaptive**. This entails establishing **regulatory frameworks** that can quickly **adjust to new market requirements and international trade agreements**. It's crucial to foster an environment where businesses can swiftly adapt to changing standards for product quality, safety, and sustainability. By doing so, local exporters can remain competitive on the international stage, ensuring that products meet the ever-changing demands of global markets and maintaining the reliability of export supply chains.

**Post-2030**

- Post-2030, the strategic **development of export capabilities** will significantly depend on the **incorporation of advanced technologies**. Artificial Intelligence (AI) will revolutionise **logistics**, optimising supply chains for efficiency and speed. AI-driven logistics systems can **forecast demands**, automate cold chain operations, and provide adaptive routing for transportation, thereby reducing delivery times and costs. Blockchain technology is set to play a pivotal role in enhancing **traceability and transparency** within the supply chain. By providing an immutable ledger for recording transactions, blockchain will ensure the **authenticity and safety of products**, build trust with consumers, and comply with stringent international standards. Additionally, the use of energy-efficient refrigerated storage solutions will not only reduce the carbon footprint of export operations but also lead to significant cost savings in the long term. These advanced, **energy-saving storage technologies** will help in preserving the quality of perishable goods, further extending their market reach.

## Flagship 11: Digitalize farmer/stakeholder registration and agriculture ecosystem to improve farmer support

### Context

The Ministries of Agriculture and Livestock and Fisheries in Tanzania encounter significant challenges related to accessing comprehensive, quality, and timely data essential for informed decision-making and targeted farmer support. These challenges stem from fragmented and largely inaccessible agricultural data, contributing to farmers' lack of basic market intelligence, inadequate agricultural extension services, and limited access to crucial information such as weather forecasting. Additionally, a lack of transparency and accountability among various stakeholders in the agriculture sector hinders fair resource distribution and overall growth.

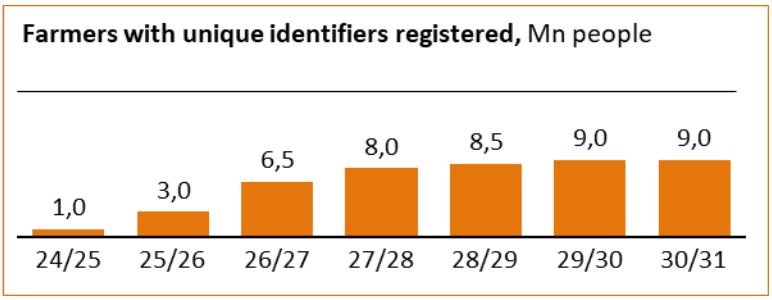
### Challenges

Several challenges persist within the agriculture sector despite ongoing efforts to address them. These include fragmented and inaccessible agricultural data, hindering the development of targeted interventions and policies. Farmers face limited access to essential agricultural information and struggle to access markets and obtain fair prices due to transparency issues. Insufficient agricultural extension services further compound these challenges, as do difficulties in monitoring and predicting crop disease outbreaks for timely intervention. Moreover, the absence of data-driven policymaking, inaccurate land ownership information, data interoperability issues, inefficient data management, and limited use of agricultural inputs contribute to the sector's inefficiencies.

### Objectives and KPIs

The primary objective of this flagship initiative is to digitalize the agriculture ecosystem, facilitating data-driven decision-making and targeted policy interventions for effective farmer support. Through enhanced extension services, dissemination of market intelligence, and access to essential information, smallholders will be empowered to plan and execute successful cultivation seasons.

The flagship aims to overcome the above-mentioned challenges by establishing a comprehensive digitalization framework. This framework will prioritise farmer and stakeholder registration with unique digital identification, serving as the foundation upon which interconnected systems can be built. By leveraging digital technologies and fostering collaboration among stakeholders, the initiative seeks to optimize agricultural data utilization, enhance transparency and accountability, and ultimately drive sustainable growth within the agriculture sector. The specific KPIs that have to be met to achieve these goals are indicated below:


Farmers with unique identifiers registered, Mn people
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3,0
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24/25
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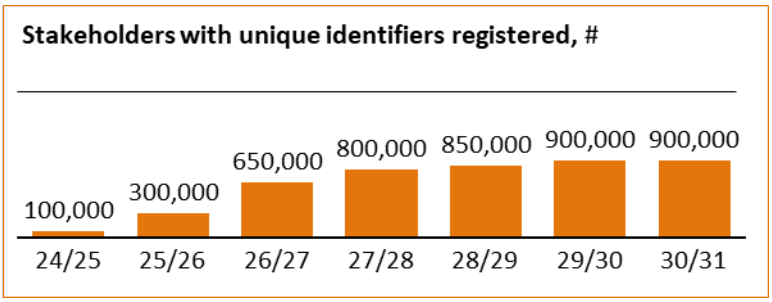
Stakeholders with unique identifiers registered, #
100,000
300,000
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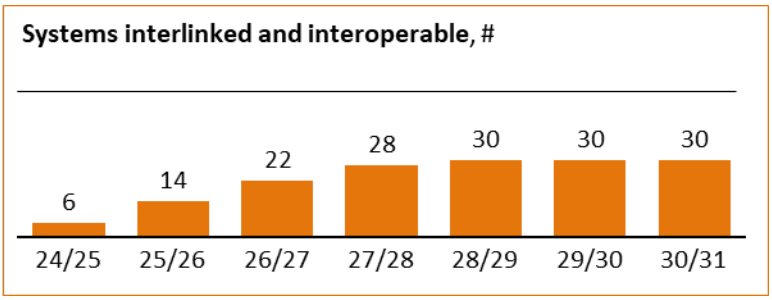
Systems interlinked and interoperable, #
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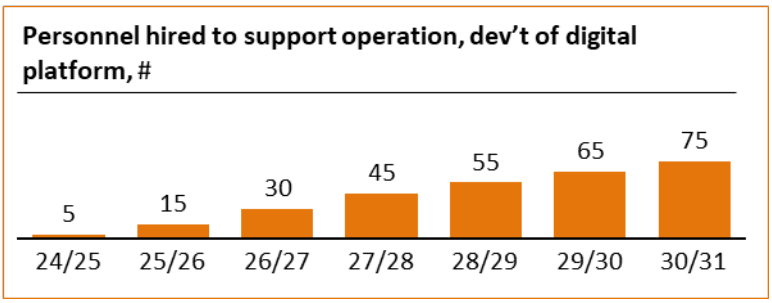
Personnel hired to support operation, dev't of digital platform, #
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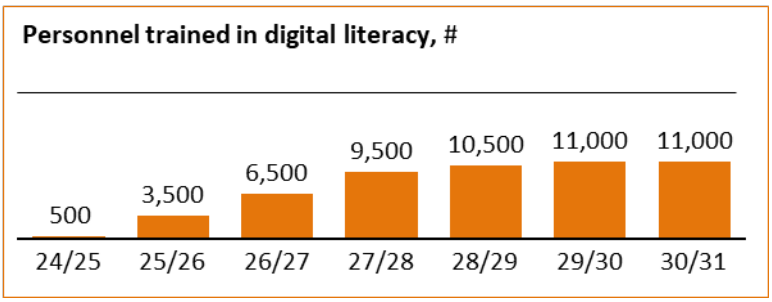
Personnel trained in digital literacy, #
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11,000
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27/28
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30/31

## Initiatives

| Component | Initiative |
|---|---|
| **A. Develop the foundational infrastructure for digitalization** | **A.1 – Develop a comprehensive farmer & stakeholder registry** as the cornerstone of all digitalization initiatives, aimed at enhancing production, productivity, and income for smallholder farmers. |
| | **A.2 – Strengthen digital data interoperability, flow, use in agriculture** by establishing a comprehensive data strategy, incl. digital architecture, development, integration of current digital systems (such as kilimo dashboard, ATMIS, ARDS, etc.) and a controlled testing environment to enhance data integration, quality, and innovation |
| **B. Build institutional capacity and governance for digitalization** | **B.1 - Enhance the Ministry of Agriculture's coordinating office** with the necessary tools and skilled personnel to facilitate strategy implementation. |
| | **B.2 – Create operational tools, including TORs, procedures, and guidelines**, to ensure a well-structured and organized approach to executing the strategy. |
| | **B.3 – Put in place the proposed governance framework to oversee and support the implementation of the strategy**, ensuring clear roles, responsibilities, and decision-making processes. |
| **C. Roll out digital use cases** | **C.1 – Build on and improve the current fertilizer subsidy platform** to include provision of other inputs such as seeds, pesticides, mechanization, irrigation, etc. |
| | **C.2 – Integration of M-kilimo, farmer call centre, farmer/stakeholder registry and other existing digital extension services** to provide comprehensive extension support to farmers |
| | **C. 3 – Select one or two use cases based on a specific criteria** (e.g. value chain, region) to build, pilot the application of digitalization to demonstrate impact, further refine the platform and scale up across other regions and commodities |
| **D. Scale up and expansion** | **D.1 – Enhance rural digital access through infrastructure procurement, cost-effective device partnerships with MNOs**, and ICT facility establishment in agricultural centres. |
| | **D.2 - Cultivate digital innovation in agriculture** by creating an innovation fund, establishing a collaborative platform, and offering capacity-building for youth-focused initiatives |

## Costing

| | | Gov Cost, M$ | | | | | | | Private Sector Cost, M$ | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Component** | **Initiative** | **24/25** | **25/26** | **26/27** | **27/28** | **28/29** | **29/30** | **30/31** | **24/25** | **25/26** | **26/27** | **27/28** | **28/29** | **29/30** | **30/31** |
| **A. Develop the foundational infrastructure for digitalization** | **A.1 – Develop/Improve comprehensive farmer and stakeholder registry:** | 8 | 17 | 29 | 13 | 4 | 4 | - | - | - | - | - | - | - | - |
| | **A.2 - Strengthen digital data interoperability, flow and use in agriculture** | 0 | 0 | 0 | 0 | - | - | - | - | - | - | - | - | - | - |
| **B. Build institutional capacity and governance for digitalization** | **B.1 - Strengthen Coordination and Resources** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | - | - | - | - | - | - | - |
| | **B.2 - Develop Effective Operational Framework** | 0 | 0 | 0 | - | - | - | - | - | - | - | - | - | - | - |
| | **B.3 - Establish Effective Governance Structure** | 0 | 0 | 0 | - | - | - | - | - | - | - | - | - | - | - |
| **C. Roll out use cases** | **C.1 - Develop comprehensive platform for input provision** | 0 | 0 | 0 | - | - | - | - | - | - | - | - | - | - | - |
| | **C.2 - Improvement and integration of digital extension services** | 0 | 0 | 0 | - | - | - | - | - | - | - | - | - | - | - |
| | **C.3 - Pilot use cases to demonstrate impact and implement SPS guidelines** | 1 | 2 | 3 | 3 | 2 | 1 | - | - | - | - | - | - | - | - |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **D.1 - Improve digital connectivity to support agriculture** | - | 0 | 0 | 0 | 0 | 0 | 0 | - | - | - | - | - | - | - |
| | **D.2 - Strengthen digital agriculture innovation ecosystem** | - | 0 | 0 | 0 | 0 | 0 | 0 | - | - | - | - | - | - | - |
| - | **TOTAL** | **10** | **20** | **34** | **16** | **6** | **5** | **0** | **-** | **-** | **-** | **-** | **-** | **-** | **-** |

**Risks and mitigations**

For the implementation of the above flagship, several risks need to be considered and mitigated. Some of these include the following:

*Data privacy and security:* The collection and storage of personal and farm-related data pose significant privacy and security risks. There's a need to ensure robust data protection measures to prevent unauthorized access, data breaches, and misuse of farmer data.

*Digital divide:* The digital divide between urban and rural areas, and among different socio-economic groups, can lead to unequal access to the digital ecosystem. Ensuring equitable access to technology and digital literacy is crucial to avoid exacerbating existing inequalities.

*Infrastructure limitations:* Inadequate technological infrastructure, including internet connectivity and electricity supply in rural areas, can hinder the effective implementation and accessibility of a digital ecosystem.

*Financial and resource constraints:* Developing and maintaining a comprehensive digital system requires substantial financial and human resources. The government needs to ensure sustainable funding and skilled manpower for the project’s longevity.

*Farmer acceptance and behavioural change:* Resistance to change and scepticism towards new technologies among some farmers can pose a challenge. Effective communication, education, and demonstration of the system's benefits are essential for widespread adoption.

*Accuracy and reliability of data:* Ensuring the accuracy and timeliness of data entered into the system is critical. Inaccurate data can lead to poor decision-making and resource allocation. Proper systems for data verification need to be created and put in place.

*Scalability and flexibility:* Systems need to be scalable to accommodate the growing number of users and flexible enough to adapt to changing technologies and farming practices.

*Integration with existing systems:* Integrating the new digital ecosystem with existing agricultural and governmental systems without causing disruptions is a challenge. Seamless integration is crucial for the effective functioning of the ecosystem. These considerations need to be made prior and tested.

*Policy and regulatory challenges:* Establishing a legal and regulatory framework that supports the digital ecosystem, including addressing issues related to land ownership, data sharing, and cross-sector collaboration, is necessary.

**Beyond 2030**

- Grow and integrate the private sector led digital platforms that can provide specialized farmer support. This is critical to ensure all stakeholders across the value chain capture the benefits of a digitalized system.
- Create a digital ecosystem that is fuelled by innovation from new startups led by youth and women. By having a conducive environment new innovations will spur growth in the sector and create a space for the digital agriculture tech to develop in the countries and subsequently beyond Tanzania.

**Flagship 12: Boost coverage and quality of extension services via the establishment of an operational supports fund, hiring of new agents, scaling of digital extension, and required refresher programmes**

**Context**

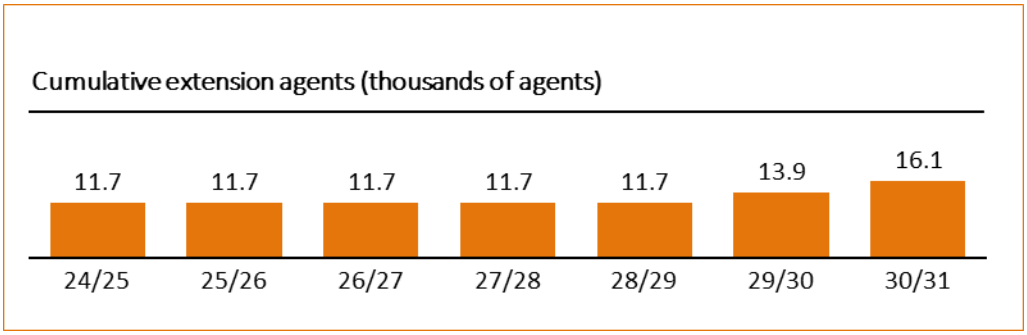
Extension officers are **critical change agents to improve smallholder farmer productivity**: on average, smallholders receiving in-person or digital extension support see **~25% productivity improvements**. Despite their crucial role, extension services **reached less than 10% of all agriculture households in 2019/2020**. In response to low coverage rates, **MoA launched the M-Kilimo digital extension platform**, however, rates of **active users are <1%.**

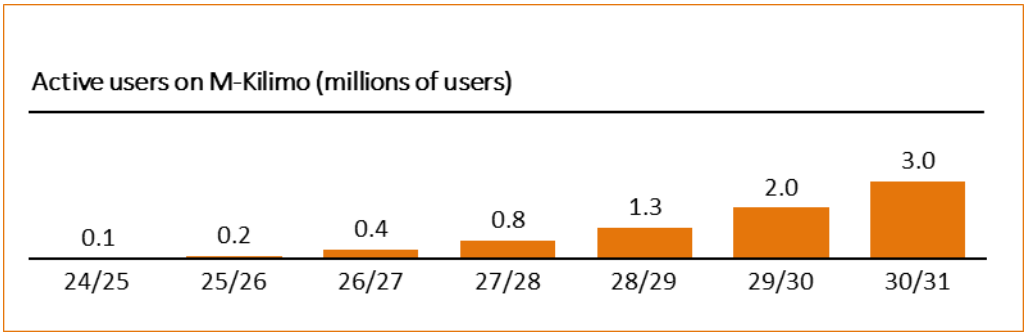
In Tanzania, **government-provided extension services dominate**, with a small presence of specialised private agents, typically affiliated with commercial entities rather than operating independently. Public extension is **severely underfunded and underequipped,** driving low coverage rates and sometimes lower quality visits. Funding is dominated by **government and donor financing, characterised by severe year-to-year inconsistencies** that impede multi-year planning. Limited funding and reported misuse of funds also leads **agents having insufficient supports for fieldwork**, such as motorbikes, tablets, and extension kits (~40% of agents don't have motorbikes and <50% have tablets). Moreover, **inadequate ongoing training opportunities** hinder agents' ability to enhance problem-solving skills and update their knowledge. **Female agents are reported to be especially at a disadvantage** when it comes to opportunities for ongoing training.

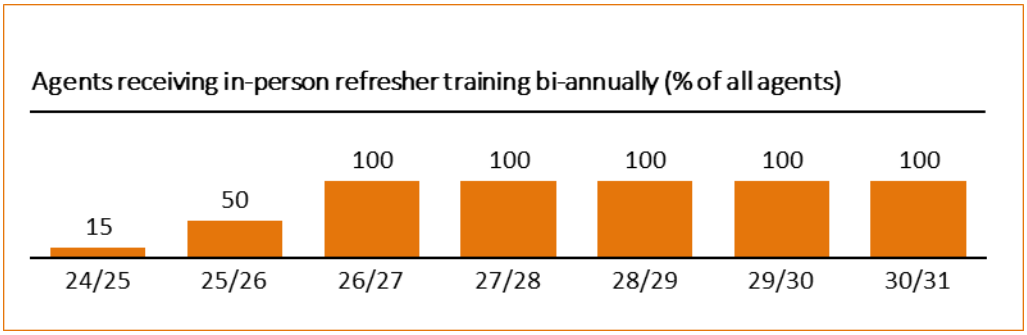
In addition to challenges of funding, equipment, and capacity building needs, **extension services also require improved incentives and oversight mechanisms**, both at the individual level and LGA levels. At the individual level, agents have limited incentives to provide high-quality services, or quality control mechanisms to ensure that visits take place and meet a baseline quality. At the LGA level, reports of reallocation of funds originally earmarked for extension to other areas (e.g., campaigning) is common. An oversight mechanism to **better track and manage use of funds** could mitigate this issue and enhance overall effectiveness of extension services.

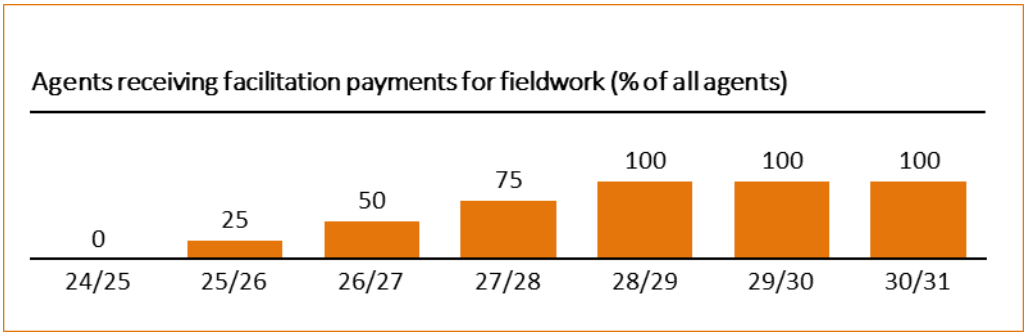
**Objective and KPIs**

By 2030, **coverage rates will more than double**, as extension agents are provided with consistent operational supports to execute their daily work. Additionally, **extension service quality will increase,** as agents will have more opportunities for skill enhancement, and incentives/oversight mechanisms will be put in place to monitor service quality.



**Initiatives**

| Component | Initiative |
|---|---|
| **A. Scale quality and quantity of extension services** | **A.1 - Establish best-in-class refresher training programme,** via creation of 40+ online video refreshers and bi-annual in-person refresher courses. Begin by designing new in-person curriculum in collaboration with MoA/MLF training institutions, and deliver first in-person training in 2025 to 50% of all agents (4 days/training). Coordinate participants based on region to minimise transport costs and logistics; in the subsequent year the remaining 50% of agents in other regions should receive training. Training can include role plays of field visits with smallholders to enhance service delivery/problem solving skills, breakout groups split by area of content expertise, and field visits.<br><br>In 2026 (once tablet distribution has been scaled in Activity B.2), launch supplementary video courses, both for general skill building and content-specific knowledge, for flexible learning. Focus on commodity-specific knowledge that may have less training material (e.g., aquaculture productivity and how to strengthen Aquaculture Development Centres), and more general knowledge that also may lack training material (e.g., how to deliver services specific to women smallholders' needs). Consider incorporating online exchange programmes (e.g., Training of Trainers) into ongoing digital refresher training |
| | **A.2 – Improve user experience and interoperability of M-Kilimo platform to improve usability and increase extension coverage for >3 million farmers.** Work alongside collaborators in Digitalisation flagship to ensure smooth integration with farmer registration database and other digital platforms. To enhance usability, conduct field visits to understand smallholder user experiences, and apply feedback of experiences to update platform functionality. Finally, promote awareness and provide trainings on how to use the platform in collaboration with LGAs, depending on uptake rates and pace of rollout |
| | **A.3 - Hire 4.4K additional extension officers**, in regions where shortage is most severe and production of prioritised commodities is high. Conduct thorough mapping of coverage rates in 2027 to inform hiring decisions (could leverage new Agri-census report), and prioritise hiring in select commodities with high growth potential. Consider gender composition of overall extension system when hiring, to ensure adequate representation of female extension agents |
| **B. Establish operational supports fund to equip agents for success** | **B.1 - Establish operational supports task force**, to monitor ongoing needs of agents (e.g., motorbikes, tablets) and to support institutionalisation of an extension supports fund. Task force will explore different options to create a dedicated pool of funding for operational supports, including (but not limited to): creation of a new line item from Central Government for operational supports; or allocation of a portion of LGA- collected crop/livestock levies to a new pooled fund. In researching different options, |

| | |
|---|---|
| | task force should consider long-term sustainability of the fund, political will, time for fund roll-out, and projected funding amount |
| | **B.2 - Procure and disburse motorbikes, tablets, vet kits, soil testing kits, and other required kits** to meet current shortage, to replace old items, and to support annual new hires (in the interim period before operational supports fund is set-up in Activity B.1.).<br><br>Current estimated motorbike shortage is ~4.5K motorbikes (to have 1 bike/officer). Procure and disburse 50% of motorbikes required in 2024, and 50% of motorbikes in 2025. Additionally, replace an estimated 2.5K non-functional motorbikes in 2024, and plan for annual replacements of a subset of motorbikes each year thereafter, as usability of each motorbike is projected to be ~4 years.<br><br>Current estimated tablet shortage is ~6.4K (after MoA makes planned disbursement of 4.3K tablets in 2024). Procure and disburse 1/3 of tablets required in 2025, 2026, and 2027. Thereafter, plan for replacement of tablets every 4 years.<br><br>Current estimated vet kit and soil testing kit shortage is 3.8K kits and 1.9K kits respectively. Disburse 50% of all required kits in 2024 and 50% in 2025. Plan for ongoing replacement of kits every 3 years thereafter. |
| | **B.3 - Establish and implement system for facilitation payments for agents to execute field duties,** beginning in 2025**.** Payments should only be disbursed when agents have left their homes/office for field work (triggered through GPS system) and can be used for daily fuel and lunch allowance. As M-Kilimo platform is enhanced with new features over time, explore opportunities to optimise time/cost of disbursing payments to extension agents (e.g., connect MoA's GPS system to extension agent profiles on new mobile application, that is connected to their M-PESA account) |
| | **B.4 - Research and establish system for performance-based incentives and accompanying monitoring system to improve extension visit quality.** Hire 5-7 task force members to explore options for different types of financial incentives in 2025 and 2026 (including monetary amount, how the amount will be determined, how many agents should receive incentives for them to be effective vs. ineffective, etc.). Then, roll out first pilot of new incentives system in 2027, integrating a feature to monitor visit quality through M-Kilimo platform, similar to new feature integration in Activity B.3. (New feature could include a function for smallholders to rate the quality of their visits on a digital platform, which is then reviewed by MoA/MLF to determine incentives payments.) |

## Costing

| | | Gov cost, M$ | | | | | | | Private sector cost, M$ | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Component | Initiative | 24/25 | 25/26 | 26/27 | 27/28 | 28/29 | 29/30 | 30/31 | 24/25 | 25/26 | 26/27 | 27/28 | 28/29 | 29/30 | 30/31 |
| **A. Scale quality and quantity of extension services** | **A.1- Establish best-in-class refresher trainings** | 0.1 | 2 | 2 | 3 | 3 | 3 | 3 | | | | | | | |
| | **A.2.- Enhance M-Kilimo platform** | 1 | 3 | 3 | 3 | 0.5 | 0.5 | 0.5 | | | | | | | |
| | **A.3.- Hire additional extension agents** | 40 | 40 | 40 | 40 | 40 | 47 | 54 | | | | | | | |
| **B. Establish operational supports fund to equip agents for success** | **B.1.- Task force for operational supports** | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | | | | | | | |
| | **B.2.- Disbursement of operational supports** | 9 | 9 | 4 | 4 | 4 | 9 | 9 | | | | | | | |
| | **B.3.- Facilitation payments** | | 5 | 11 | 16 | 21 | 25 | 25 | | | | | | | |
| | **B.4- Performance-based incentives** | | | | 1 | 1 | 1 | 1 | | | | | | | |
| | **TOTAL** | **50** | **58** | **58** | **64** | **69** | **85** | **93** | | | | | | | |

## Risks & mitigation

- **Uptake of enhanced M-Kilimo platform may be low** and/or slower than expected if smallholders have difficulty using platform, see more value in physical extension services, and/or are not satisfied with digital extension services
    - **Pilot specific digital applications before overlaying new features**, and consistently gather feedback from smallholders on what/isn't working to update/enhance user experience
- Despite being equipped required operational supports to conduct field visits, **some extension agents may still have limited incentives** to improve service quality

- In addition to financial incentives explored in Activity B.4, **consider non-financial incentives** to boost motivation and quality assurance mechanisms to enforce baseline standards through new monitoring system. Additionally, **conduct light screening of applicants' motivation** during hiring of new agents

**Post-2030**

- **Assess the efficacy of the selected mechanism for operational supports fund** (i.e., how funds are collected and where they sit)**,** to determine if funds should be collected from alternative revenue sources and/or sit in different gov't dept.
- **Scale up digital extension services** to boost extension coverage and to overlay new features to improve service quality (e.g., feature for smallholders to rate the quality of their visits, and link this to disbursement of performance-based payments for agents)
- **Expand pluralistic ecosystem of gov't and private extension services,** to increase current share of private extension and improve collaboration across both sectors (e.g., for peer trainings, joint service-provision)
- **Consider short-term regional/ international exchange programmes** as an incentive for top-performing extension agents, to motivate agents to provide high-quality services/ improve service delivery through learning of new extension approaches/ ag. technologies

**Flagship 13: Provide access to financing to 1.7 Mn beneficiaries in groups and 30k SMEs through increased distribution networks, adapted products and risk-sharing mechanisms**

**Context**

Agriculture contributes ~30% to Tanzania's GDP but attracts only **9% of financing.** In rural areas, in 2023, 14.5% of Tanzanians have or use bank services, 53.8% don't have or use bank services but have or use other formal services (i.e., insurance, SACCOs, MFIs, Remittance companies, Mobile Money, CMGs), 8% don't have or use formal services but use informal services (i.e., shops/supply chain credit, money lenders) and 23.7% are financially excluded (i.e., friends/family, save at home).[121] This disparity is partly due to **financial exclusion** affecting 60% of stakeholders and 80% of SHF, due to:

- **High level of risk and insufficient returns** due to **lack of collateral, lack of scale and limited financial literacy and business planning skills** among farmers and other value chain actors
- **Limited access to relevant data** (e.g., inadequate financial records) for mobile network operators (MNOs), banks and insurers to make informed lending decisions due to a lack of integration with existing high-reach technologies for record keeping
- **Inadequate products** (loans and insurances) **failing to cater to agriculture's unique requirements** (e.g., in season/short-term; to accommodate multiple crops & livestock on the same parcel)
- **Lack of distribution channels**, i.e., in rural areas, ~1/5 of Tanzanians do not live within 5km radius of a financial access point.

**Informal credit services** like Savings and Credit Cooperative Societies (SACCOs) and digital solutions via mobile applications to provide access to financial services (e.g., mobile payment, credit, insurance) in rural areas (e.g., M-Kulima by Vodacom: ~3 millions farmers focusing on ~13 commodities) are prevalent, yet **interest rates remain high** (9-12%). Some **risk sharing mechanisms including guarantee funds** for farmers and small businesses have shown success in mitigating risks for commercial banks and could be **expanded:**

- **Guarantee up to 80% with PASS** - provide loan guarantees up to 60% and insurance to stimulate lending by financial institutions (worked with 15 financial institutions) offer credit guarantee cover with the aim of topping up clients' collateral to help them become eligible for loans. PASS is the only credit guarantee schemes in Tanzania offering banks a guarantee coverage ratio of 50 to 75%, with up to 80% for projects owned by women or young people. A total of 1.15 million agricultural entrepreneurs have benefited from PASS-guaranteed loans, which amounted to some 845 billion Tanzanian shillings (TZS) between 2000 and 2019, nearly two thirds of that in the last four years. Over 2.5 million jobs have been created as a result.

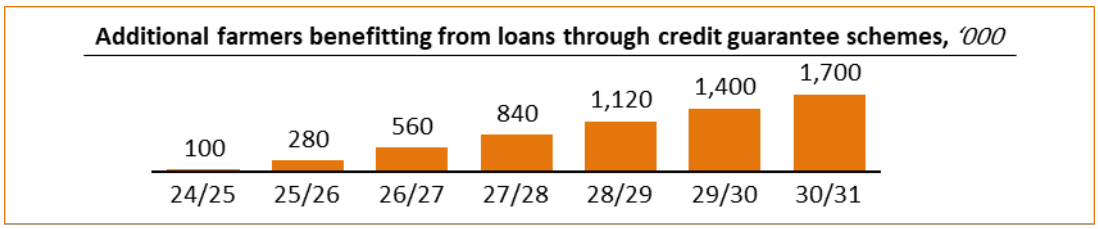
- **Guarantee up to 50% with TADB through the Smallholders Credit Guarantee Scheme (SCGS)**[122] **with interest rates still high** (i.e., 9-12%) - provide up to 50% cash cover to partner banks to guarantee Agriculture loans (~16Mn USD disbursed for ~6,000+ beneficiaries)

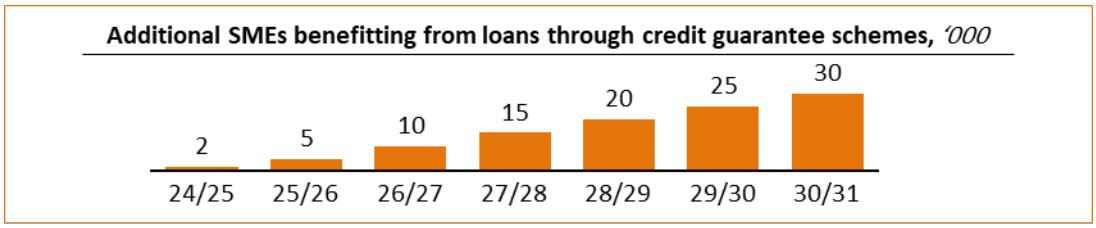
[121] Source: FinScope Tanzania 2023 ; assuming that largest population in rural areas are farmers

[122] Smallholder Credit Guarantee Scheme USD 25 Mn fund aimed at de-risking and providing liquidity to banks and financial institutions to catalyze financing for smallholder farmers and agri-SMEs providing commercial banks with a 50% credit risk guarantee

**Objective and KPIs**

*Increase access to finance for 1.7 Mn SHF and 30k SMEs focusing on high demand commodities through increased distribution networks, adapted products and risk-sharing mechanisms*




**Focus on 9 high demand commodities:** horticulture, cotton, cashew, coffee, paddy, sunflower, aquaculture, dairy, poultry

**Initiatives**

| Component | Initiative |
|---|---|
| **A. Improve financing enabling environment** | A.1 - Establish a working group incl. **financial banks, insurers and regulators (i.e., BoT and TIRA)** to work on **Regulations, Guidelines and Circulars** that would enable financial institutions to **design appropriate banking and insurance products specific to agriculture** (e.g., interest rates, temporality, insurance conditions) |
| | A.2 - Establish **one focal point to coordinate** all the different **risk sharing and de-risking instrument for agricultural lending** in Tanzania and make sure they **deliver the most impact** |
| | A.3 - **Interconnect digital ecosystem sharing with mobile network operators (MNOs) and banks** in order to enable and facilitate data access (incl. identification and profiling) on farmers to facilitate access to financing |
| **B. Provide access to financing to 1.7 Mn beneficiaries in groups (farms, ponds and cages,** | B.1 - Support SHF in the **improvement of their credit score:** i) Set up a team to build **enforcement mechanisms, i.e., ensure value chains are cashless to improve credit score of SHF** (in collaboration with Boards), ii) scale **AgriGRADE approach** |
| | B.2 – **Capacitate community banks and AMCOs to establish and manage SACCOS** by providing comprehensive training, regulatory guidance, and technical assistance and **support SACCOS to finance agriculture** |

| | |
|---|---|
| **livestock areas), with an equitable approach to loan distribution** | B.3 - Increase **TADB wholesale** by collaborating with 8 financial institutions to **lend** to **35k Smallholder Farmers (SHF)** through loans with interest rates ranging from 5% to 7% |
| | B.4 - Provide access to financing to **1.7 Mn beneficiaries** by expanding **Smallholders Credit Guarantee Scheme (SCGS)**[1] providing Partner Financial Institutions (PFI) with a **50% credit risk guarantee for SHFs**[2] (producing horticulture, cotton, cashew, coffee, paddy, sunflower, aquaculture, dairy, poultry) |
| **C. Provide access to financing to 30k SMEs, with an equitable approach to loan distribution** | **C.1 - Provide loans to 12,000 SMEs under BBT and 3,000 larger SMES in incubators by expanding existing incentive mechanisms** (e.g., African Guarantee Fund (AGF)) providing acceptable collateral by sharing the risks with banks (average loan of USD ~6k) |
| | C.2 - **Provide loans to 15,000 SMEs by increasing uptake for SMEs products** (e.g., Aceli Africa) including origination subsidies for smaller agricultural loans for SMEs as well as a first loss guarantee facility |

## Costing

| | | Gov Cost, M$ | | | | | | | Private Sector Cost, M$ | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Component** | **Initiative** | **24/25** | **25/26** | **26/27** | **27/28** | **28/29** | **29/30** | **30/31** | **24/25** | **25/26** | **26/27** | **27/28** | **28/29** | **29/30** | **30/31** |
| **A. Improve financing enabling environment** | **A1. Work on Regulations, Guidelines and Circulars for financial institution** | 0,0 | 0,5 | 0,5 | 0,0 | 0,0 | 0,0 | 0,0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | **A2. Coordinate all the different risk sharing and de-risking instrument** | 0,0 | 0,5 | 0,5 | 0,0 | 0,0 | 0,0 | 0,0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | **A3. Enable and facilitate data access on farmers for banks/ insurers** | 0,0 | 0,5 | 0,5 | 0,5 | 0,5 | 0,5 | 0,0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **B. Provide access to financing to 1.7 Mn beneficiaries in groups** | **B1. Support SHF in the improvement of their credit score** | 0,0 | 0,5 | 0,5 | 0,0 | 0,0 | 0,0 | 0,0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | **B2. Capacitate community banks and AMCOs to establish and manage SACCOS** | 0 | 0 | 1 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | **B3. Increase TADB wholesale to lend to 35k SHF** | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | **C1. Provide access to financing to 1.7 Mn beneficiaries by expanding SCGS** | 2 | 5 | 5 | 5 | 5 | 9 | 9 | 0 | 93 | 185 | 185 | 185 | 185 | 185 |
| **C. Provide access to financing to 30k SMEs** | **C2. Provide loans to 12,000 SMEs under BBT and 3,000 larger SMES in incubators** | 2 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 8 | 16 | 16 | 16 | 16 | 16 |
| | **C3. Provide loans to 15,000 SMEs by increasing uptake for SMEs products** | 2 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 8 | 16 | 16 | 16 | 16 | 16 |
| | **TOTAL** | **8** | **9** | **11** | **10** | **10** | **15** | **14** | **0** | **109** | **218** | **218** | **218** | **218** | **218** |

## Risks & Mitigation

In providing access to financing, there's an inherent risk of **loan defaults**, which can be detrimental to the stability of financial institutions. To mitigate this risk, the implementation of **stringent credit assessments** is essential. Such assessments would thoroughly evaluate the creditworthiness of potential borrowers, considering their **financial history, repayment capacity, and the viability of their business plans**.

In tandem with these assessments, offering **financial literacy programmes** is crucial. These programmes would educate potential borrowers on managing finances, understanding the responsibilities that come with taking out loans, and planning for sustainable business growth. By enhancing financial knowledge, borrowers are more likely to manage their debts effectively, make informed financial decisions, and thus reduce the likelihood of default.

Moreover, financial literacy programmes can extend to cover **risk management, savings strategies, and insights into market dynamics**. This holistic approach to borrower education will not only aid in reducing default rates but also contribute to the development of a **more resilient and financially savvy group of entrepreneurs and SMEs**. These measures, combined, will enhance the overall health of the credit ecosystem and contribute to the sustainable growth of the economy.

**Post-2030**

- Post-2025, the focus is anticipated to shift towards enhancing the sustainability and growth potential of agricultural companies through **equity participation**. This approach involves financial institutions and investors taking ownership stakes in agricultural enterprises, aligning the financial incentives with the long-term success of the business. Equity participation can provide companies with the capital infusion necessary to innovate, expand, and improve their competitiveness, without the immediate burden of debt repayment. This strategy also encourages more responsible corporate governance and ensures that investors and stakeholders are committed to the ethical and sustainable growth of the agricultural sector.

- The evolution of financing beyond 2030 will likely see a significant push towards embedding financial services within **digital and mobile platforms**. This digital expansion is crucial for broadening the reach of financing, making it accessible to remote and underserved populations. Mobile platforms, with their widespread usage, offer an unparalleled opportunity to provide seamless access to financial products, real-time transaction capabilities, and tailored financial advice. The integration of financial services with digital technology can also facilitate better data collection and risk assessment, leading to more personalised and efficient financial solutions.

- The future of agricultural financing is expected to increasingly favour **green financing initiatives**. These initiatives are designed to support practices that are not only eco-friendly but also adaptive to the changing climate. Loans and financial products will be structured to incentivise sustainable agricultural practices, such as the use of renewable energy sources, water-efficient irrigation systems, and climate-resilient crops. By shifting towards green financing, financial institutions will play a pivotal role in promoting sustainable development and can potentially tap into new markets by appealing to environmentally conscious investors and consumers. This shift is also in line with global trends towards sustainability and could offer agricultural businesses a competitive advantage on the global stage.

**Flagship 14: Sustainably unlock 1.5Mha for commercial agriculture and 1.2Mha land ownership for smallholders including women and young people through an agricultural land database.**

**Context**

Existing reports estimate that Tanzania currently has 44 million hectares of arable land which have been reported in documentation preceding the early 2000s until now. For area under cultivation, the estimates vary between 10.8 million hectares to 15 million hectares depending on the source.

Overall, there is limited visibility on the amount of agricultural land available, or in use across the country. This has also led to instances of various parcels of productive, commercial agricultural land not being used due to various factors, including receiverships. While other productive agricultural parcels have been repurposed because there is no structure protecting agricultural land. A recurring issue has also been clashes between farmers; herders due to encroachment on land/routes.

According to the national agriculture census, 9% of smallholder land has legal documentation which is less for women than it is for men. Accessing legal documentation is further limited by the fact that 22% of villages in Tanzania have land use plans. Land use plans are required to allocate lands for different uses including agriculture and are also required before rights of occupancy can be issued. Furthermore, accessing land for commercial agricultural activities can be daunting. it also takes longer to acquire land in Tanzania, than the sub-Saharan Africa average and neighbouring country, Kenya.

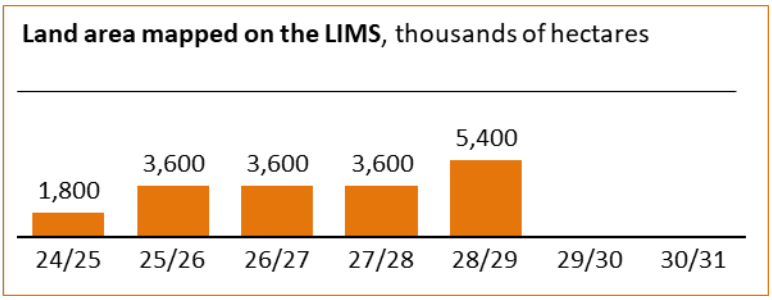
**Objectives and KPIs**

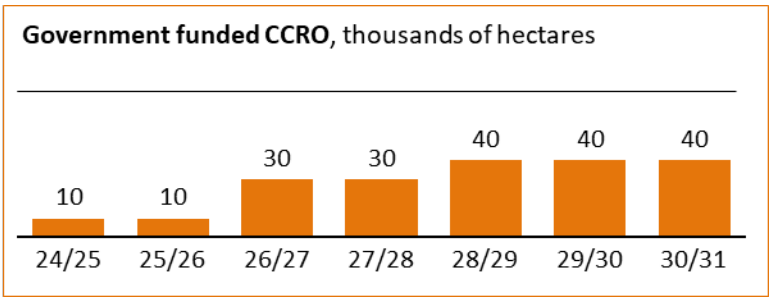
This flagship aims to provide the government with visibility on availability and utilisation of agricultural land in the country, facilitate land access for smallholders with a focus on women and young people, and secure land access for commercial agricultural activities.

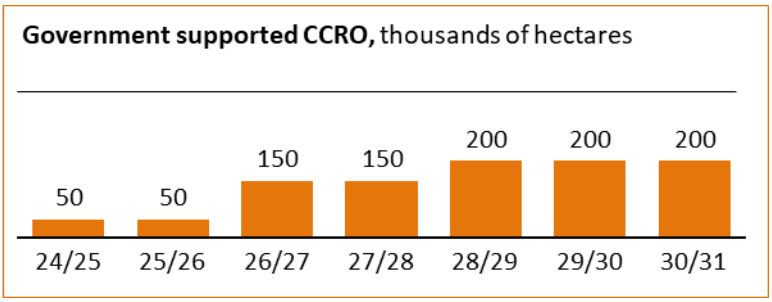
This flagship would facilitate/support the further development of land use plans for more villages and facilitate smallholders in securing Customary Certificate Right of Occupancy (CCROs). These CCROs would provide farmers with security and unlock access to formal services including financing. It would also secure land parcels for commercial farming to facilitate investments in agriculture. This would be enabled through the creation of a landbank which investors can lease or purchase for agribusiness purposes. This landbank is supported by relevant enablers and policies, including standardised secure land tenure arrangements to incentivise long-term investments in agriculture, the land and the communities.

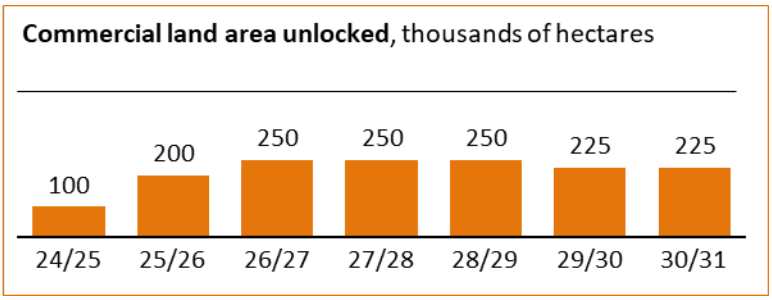
The creation of a Land Information Management System (LIMS) which can provide real-time access to information including land available for agriculture, current utilisation, ownership status, etc., would aid the administration of the landbank, wider-agricultural land in the country, planning and investments. Overall, it would also serve as the platform which would facilitate land access to smallholders and commercial farmers.

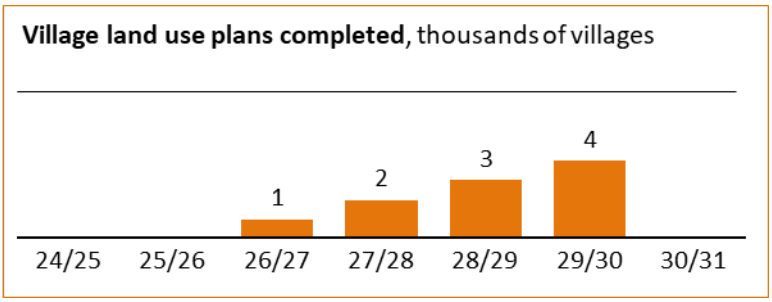
The following are the key performance indicators (KPIs) and their yearly breakdowns until 2030/31 to track the progress and impact of this flagship:


Land area mapped on the LIMS, thousands of hectares
1,800
3,600
3,600
3,600
5,400
24/25
25/26
26/27
27/28
28/29
29/30
30/31


Government funded CCRO, thousands of hectares
10
10
30
30
40
40
40
24/25
25/26
26/27
27/28
28/29
29/30
30/31


Government supported CCRO, thousands of hectares
50
50
150
150
200
200
200
24/25
25/26
26/27
27/28
28/29
29/30
30/31


Commercial land area unlocked, thousands of hectares
100
200
250
250
250
225
225
24/25
25/26
26/27
27/28
28/29
29/30
30/31


Village land use plans completed, thousands of villages
1
2
3
4
24/25
25/26
26/27
27/28
28/29
29/30
30/31

**Initiatives**

| Component | Initiative |
|---|---|
| A. Create a **database of agricultural land** in Tanzania | **A.1- Establish legal framework, policy, baseline data requirements and IT backend to support execution of the development of the Ag. LIMS (Land information Management System)**. The use cases in components B and C would determine the approach though which the LIMS platform would be developed, and the IT back-end and frontend needs. Data requirements are to include (but not limited to) crops grown, ownership details, history, status, etc. This is to be developed in collaboration with stakeholders including farmers, sectorial ministries, departments and agencies. |
| | **A.2- Digitise existing land use plans**, with a focus on land parcels identified for agriculture and incorporate relevant details including ownership status, details, history, etc. **Conduct detailed mapping** of allocated but unused agricultural land e.g., abandoned wheat and sisal estates or land areas under receivership. Execute **national agricultural land mapping** using a combination of geospatial data and ground truthing. Data collected during this mapping exercise would serve as a base until national land use plans have been developed. All mapping in this initiative is to be uploaded and documented in the LIMS. |
| | **A.3- Unlock agricultural land** by setting-up multisectoral teams comprising the Vice-Presidents Office, Environment, Ministries of Agriculture, Livestock and Fisheries, Lands, Local Governments, etc. and deploying resources (e.g., manpower, funding, etc.) to increase the pace of execution of land-use plans in the country. This should be done by prioritising areas identified in A2 which have a high concentration of agricultural lands and areas which are most prone to agricultural land disputes. Agricultural land in the new land use plans created are to be uploaded into the LIMS. |
| B. Create a path for **security and commercialisation** for **smallholder farmers** though land access | B.1- Create a multisectoral technical team comprising the Ministries of Agriculture, Livestock & Fisheries, Lands, Local Government, etc. to **facilitate efforts to secure CCROs for smallholder farmers. The focus would be primarily for women and young people.** This is to be done on the back of land use plans being completed, identifying vulnerable communities and supporting groups of smallholders with surveying and bureaucratic processes to have the CCROs delivered to them. By using the extension system and other media outlets share knowledge with the wider community of smallholder farmers on the benefits, dispelling rumours, and process of securing CCROs for their lands. This would also involve creating a desk at the outposts of the local |

| | |
|---|---|
| | government offices which farmers can visit to enquire about the benefits and process of obtaining CCROs |
| | B.2- Develop and implement **policies to bolster the security of agricultural land** from encroachment, protection of allocated parcels for agriculture in land use plans. Also create a framework to enable data generated and uploaded in the LIMS to be used for resolution of dispute regarding ownership, contracting, etc. |
| C. Make agricultural **land accessible** for agriculture focused investment and **commercial activities** | **C.1- Design land access policy framework.** For the Ministries of Agriculture, Livestock & Fisheries it would facilitate the sub-leasing of land to investors and streamline the issuance to permits for aquafarming. For the Local Government Authorities, which would govern leasing/sale of land to investors. This is to include standardised guidelines/contracts which can facilitate rapid conclusion of land leasing/sale agreements with investors. |
| | **C.2- Pilot and scale land banking** by acquiring land (leveraging TIC where appropriate), digitising its details on the LIMS, and making it accessible to investors online and via a desk at the ministries of Livestock and Fisheries and Agriculture. This way investors can fully understand land opportunities for commercial activities. It can also support other relevant government agencies can be clear on areas to prioritise for development to attract the necessary investments in the country. |

## Costing

| | | Gov Cost, M$ | | | | | | | Private Sector Cost, M$ | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Component** | **Initiative** | **24/25** | **25/26** | **26/27** | **27/28** | **28/29** | **29/30** | **30/31** | **24/25** | **25/26** | **26/27** | **27/28** | **28/29** | **29/30** | **30/31** |
| A. Create a **database of agricultural land** in Tanzania | A.1 - Develop **legal framework and policy, requirements and IT back end** | 2 | 2 | 2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | **A.2 - Digitize existing land use plans**, and map cultivated land nationally | 3 | 6 | 6 | 6 | 8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | A.3 - Increase the pace of execution of land-use plans | 0.0 | 0.0 | 6 | 12 | 17 | 23 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| B. Create a path for **security and commercialization** for **smallholder farmers** though land access | B.1 - Facilitate efforts to secure CCROs | 0.3 | 0.3 | 1 | 1 | 1 | 1 | 1 | 12 | 12 | 36 | 36 | 48 | 48 | 48 |
| | B.2 - Develop and implement **policies to bolster the security of agricultural land** . | 0.2 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| C. Make agricultural **land accessible** for agriculture focused investment and **commercial activities** | **C.1 - Design land access policy framework.** for subleasing land and issuance to permits for aquafarming | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | **C.2 - Pilot and scale land banking** | **28** | **53** | **73** | **74** | **74** | **67** | **66** | **0.0** | **0.2** | **0.5** | **1** | **2** | **4** | **8** |
| | **TOTAL** | **33** | **61** | **88** | **93** | **101** | **92** | **68** | **12** | **12** | **36** | **37** | **50** | **52** | **56** |

**Risks & Mitigation**

There is a risk that smallholder farmers may be displaced as commercial farming activities expand. This could lead to disputes and of livelihoods especially in vulnerable communities.

- Protect the rights of smallholder farmers and ensure their inclusion in decision-making processes in the development of land use plans and allocation of land for commercial purposes.

This may lead to the repurposing of land for higher value crops, changing traditional land use patterns.

- Inclusion of local communities and stakeholders to ensure their voices are heard in the decision-making process. Land allocation for different uses should be based on the equitable distribution of land.

Poor data quality may undermine the credibility and usefulness of the system, leading to inaccurate land information.

- Implementing robust data collection and validation procedures, with significant investment in ground truthing, stakeholder feedback capacity development and improving mechanisms.

**Post-2030**

- Ensuring smallholders, especially women and young people have land rights and building on land use data to ensure its up-to-date and widely available for decision making.
- Integration of the Ag. LIMS to financial services and insurance. This can enable simplified access to credit especially for smallholders. It can be used to assess a farmer's credit worthiness though e.g., land ownership status, weather patterns, crop performance, etc. and enable farmers access financing quickly.
- Weather forecasting using remote sensing technologies and GIS to monitor crop performance, land cover changes, water availability, etc. which can enable more informed decision making.

## Flagship 15: Enhance food security through strengthened warning systems, strategic food and feed reserves and emergency response, as well as fish Monitoring, Control, and Surveillance (MCS)

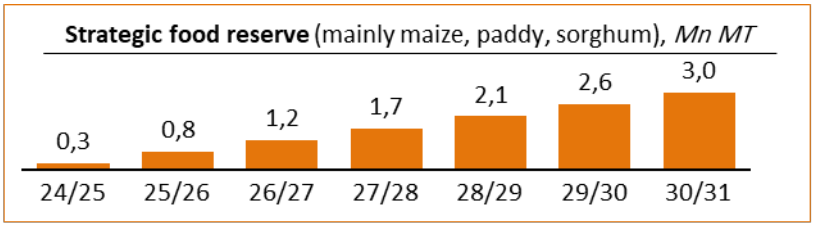
### Context

Food systems are increasingly **impacted by shocks** such as extreme weather and disease outbreaks, yet there's a **lack of preparedness** to address these risks and protect vulnerable households. The Early Warning Systems is not **digitalised, suffering from poor data quality**, hindering both **internal** (e.g., crop yields, forecasts, shocks) and **external** (trade partners' data) analyses. Additionally, there's an absence of **emergency response readiness**, characterised by no **feed reserves** and a **shortage of clear guidelines and procedures**. The **Monitoring, Control, and Surveillance (MCS) of fisheries** is also inadequate, compounded by **weak enforcement mechanisms**.

### Objective and KPIs

*Enhance food security and resilience through a fully operational system monitoring internal and external early warnings, a strategic food and feed reserve and a fish Monitoring, Control, and Surveillance (MCS) system*

**Fully operational system monitoring internal and external early warnings by 2030**




**Fish Monitoring, Control, and Surveillance (MCS) enforcement mechanism fully operational by 2030**

**Initiatives**

| Component | Initiative |
|---|---|
| **A. Strengthen a warning system, i.e., data management tool with alerts** | **A.1 - Strengthen the Early Warning System**[1] (e.g., Crop yield and Production Forecasts, Crop Monitoring, outbreak, drought risk), with an automated integration of external marketing Early Warnings (e.g., prices, export bans from trade partners) - to be integrated to the 'digital information system' in the Prime Minister's Office Disaster Management Department[2] |
| | **A.2 - Establish a unit to inform decisions** based on agricultural and Food Security data and Statistics interpretation and forecasts |
| | **A.3 - Ensure coordination between local, district, national levels, incl. different Ministries:** implement a training programme, train at least 75% of relevant personnel across involved ministries, local Governments on tool |
| **B. Enhance the strategic food reserve, including an emergency response mechanism (guidelines and SOP) - to review existing guidelines** | **B.1 - Expand and upgrade grain storage facilities, technologies** to increase capacity by 10X and integrate advanced food stocks mgmt. technologies |
| | **B.2 - Expand Food Reserve Agency to include feed** as a standalone entity or in collaboration with Ministry of Livestock or another entity |
| | **B.3 -** Develop digital **operational guidelines** for **MoA and MLF** quick emergency response in case of hazards affecting agriculture as well as **Standards Operating Procedures (SOP)** (i.e., roles, responsibilities and legal basis for actions) **for the PMO coordination response** |
| **C. Ensure stable fish stock by reinforcing Monitoring, Control and Surveillance** | **C.1 - Design and strengthen the implementation of policies** to limit destructive fishing practices (e.g., breeding seasons) |
| | **C.2 - Establish and implement a stronger enforcement mechanism system** for Monitoring, Control and Surveillance (MCS) of fish stock |

## Costing

| | | Gov Cost, M$ | | | | | | | Private Sector Cost, M$ | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Component** | **Initiative** | **24/25** | **25/26** | **26/27** | **27/28** | **28/29** | **29/30** | **30/31** | **24/25** | **25/26** | **26/27** | **27/28** | **28/29** | **29/30** | **30/31** |
| **A. Strengthen a warning system, i.e., data management tool with alerts** | **A1. Strengthen the Early Warning System** | 0 | 0 | 10 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | **A2. Establish a unit to inform decisions** | 0,0 | 0,3 | 0,3 | 0,3 | 0,3 | 0,3 | 0,3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | **A3. Ensure coordination between local, district and national levels** | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **B. Enhance the strategic food reserve, including an emergency response mechanism** | **B1. Expand and upgrade grain storage facilities and technologies to increase capacity by 10X** | 0 | 0 | 0 | 20 | 20 | 25 | 25 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | **B2. Expand Food Reserve Agency to include feed** | 0 | 0 | 0 | 3 | 3 | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | **B3. Develop digital operational guidelines for MoA and MLF quick emergency response** | 0,0 | 0,0 | 0,5 | 0,5 | 0,5 | 0,0 | 0,0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **C. Ensure stable fish stock by reinforcing Monitoring, Control and Surveill** | **C1. Design and strengthen the implementation of policies to limit destructive fishing practices** | **0,0** | **0,5** | **0,5** | **0,5** | **0,5** | **0,0** | **0,0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ance (MCS) | C2. Establish and implement a stronger enforcement mechanism system for MCS | 0 | 7 | 4 | 4 | 4 | 4 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | TOTAL | 0 | 8 | 16 | 30 | 30 | 34 | 34 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

## Risks & Mitigation

- **Poor data quality and segmented access due to disparate sources** are significant risks that can **undermine the effectiveness of food security systems**. To address this the **implementation of a centralised data integration platform** is crucial. Such a platform would aggregate data from various sources, ensuring high data quality and consistency. It would also facilitate real-time access and analytics, enabling stakeholders to make informed decisions quickly. This integration platform should leverage advanced data processing technologies, including cloud storage, data mining, and machine learning, to detect patterns that may indicate emerging food security threats.

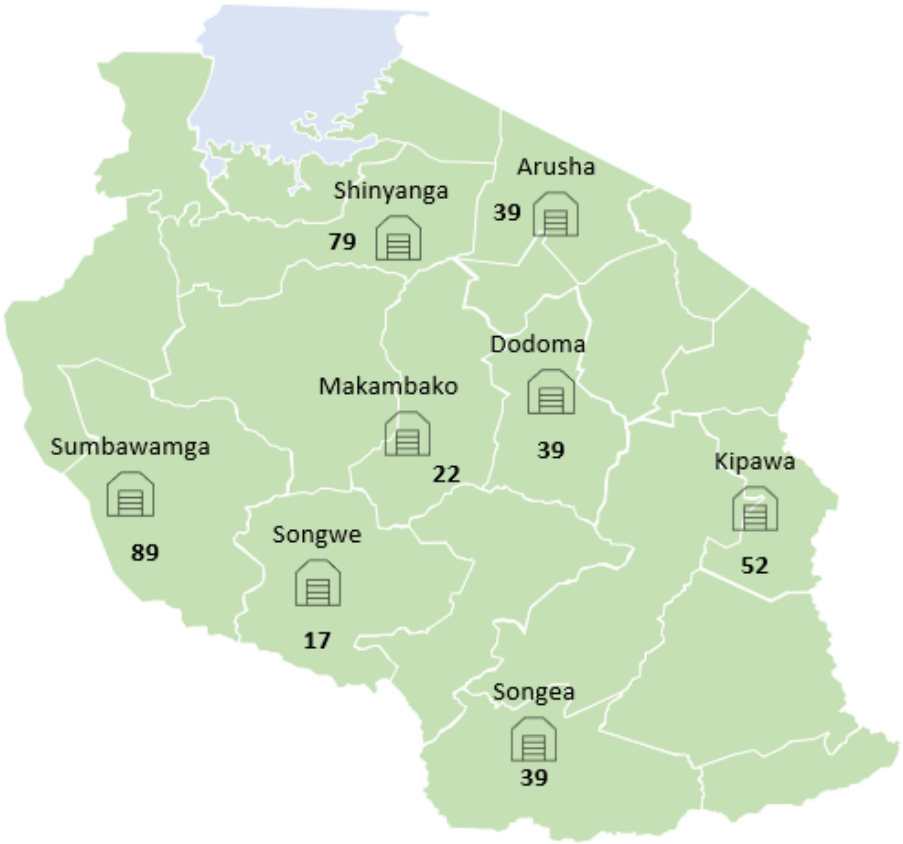
- The **lack of an adequate budget for emergencies can** severely delay the response to food security crises. Allocating a **dedicated emergency fund** is a strategic mitigation measure. This fund would be earmarked specifically for rapid response to food security emergencies, ensuring that financial resources are immediately available when needed. The management of this fund should be transparent and guided by strict governance protocols to ensure timely and effective disbursement of resources during crises. Moreover, the fund could be supported by various financial instruments, including contingency funds, emergency credit lines, and international aid agreements, to bolster its capacity.

## Post-2030

- Beyond 2030, **expanded food reserves** will play a critical role in fortifying food security. These reserves should encompass a **wider array of commodities**, particularly those that are nutritionally significant and climate-resilient. The strategic inclusion of new commodities will help to diversify the food base and provide a buffer against crop failures or market fluctuations. Alongside this, **enhanced regional collaboration** is essential. By working in concert with neighbouring countries and regional bodies, shared food reserves can be established, facilitating cross-border flow of food commodities during shortages and fostering a collective response to food security challenges. Such collaboration could involve joint investments in storage facilities, coordinated policy-making, and shared logistics for the distribution of food reserves.

- The proactive management of food security risks will greatly benefit from the **integration of technological and analytical advancements**. This includes **leveraging big data**

**analytics, predictive modelling, and machine learning** to anticipate and respond to food security threats before they materialise. The use of advanced sensors and satellite imagery can provide detailed insights into crop health, soil moisture levels, and climate impacts, allowing for pre-emptive measures to safeguard food supplies. Additionally, the application of artificial intelligence can streamline the analysis of complex data sets, leading to more accurate forecasting and enabling quicker, more informed decision-making. By integrating these technological tools, food security systems can evolve from reactive to proactive, anticipating risks and implementing preventive strategies in advance.




**Locations of current national food reserve capacity,** *'000 MT*

## D. Flexibility of implementation of the AMP

**It is critical to have flexibility in the roadmap provided by the AMP to be able to navigate potential changes which could arise during the journey**. This flexibility is crucial for addressing shifts in budget allocations—whether increases or decreases—, evolving priorities due to internal or global trends, and insights gathered from the plan's execution. The AMP's design encourages periodic adjustments, ensuring it remains a living document that can evolve in response to new challenges and opportunities, rather than being a rigid blueprint impervious to change.

**Amending the AMP to reflect emerging changes should be done adhering to the principles and approach of the AMP**:

- **Engagement with Stakeholders**: Central to the AMP's design, stakeholder interaction and co-creation should continue to influence any modifications to the plan. This involves identifying and collaborating with stakeholders relevant to the specific changes being considered, ensuring comprehensive support and alignment.
- **Navigating Trade-offs**: Adaptation involves making informed choices between competing priorities, such as balancing the focus between smallholder income and agricultural GDP growth or considering short-term benefits against long-term objectives. Engaging in political discussions to manage these trade-offs is crucial.
- **Prioritising Interventions**: Within budgetary constraints, it's important to continue to focus on interventions that are feasible and can deliver meaningful outcomes, rather than spreading resources too thinly across numerous initiatives.
- **Understanding Interdependencies**: Recognising the interconnectedness of flagship initiatives is vital. Some flagships are critical to enable others and should hence be prioritised (e.g. ensuring land availability for seed production is prioritised before incentivising private seed companies development, ensures the first bottlenecks are addressed initially)

**The task of adapting the AMP requires specific tools and expertise which will be provided by the Agriculture Transformation Office.** The ATO will own and be able to run the advanced macro-economic models which have been used to design the AMP. This will allow to run multiple scenarios based on emerging changes and to model the impact on GDP impact, jobs, undernourishment, and other metrics. This will be critical to ensure deviation from the AMP are done through a robust fact base and analysis. This will finally need to be done in collaboration with the key ministries to ensure the changes are anchored and validated at the highest political level. By embedding flexibility into its framework, the AMP positions itself as a responsive plan capable of driving Tanzania's agricultural transformation forward, even in the face of evolving challenges and opportunities.

## E. Link to macroeconomic and development commitments

Tanzania's wider macroeconomic goals can be found outlined in the Five-Year Development Plan III (FYDP III). The Master Plan strives to align with these wider goals through its own targets and flagships.

*Table 1: Link between AMP and FYDP III objectives*

| **FYDP III objectives** | **Masterplan** |
|---|---|
| To build on achievements realised towards the attainment of Tanzania Development Vision (TDV) 2025 | AMP strives to ensure food security, promote women's opportunities, increase smallholder incomes, achieve 10% annual agricultural growth by 2030, enhance productivity, and boost exports, in line with the TDV's goals for high quality livelihoods and a competitive economy |
| To strengthen capacity building in the areas of science, technology and innovation | Flagship 12 will support scaling and strengthening of extension services, for extension agents to be at the forefront of disseminating latest agriculture technologies to smallholders |
| To strengthen the industrial economy as a basis for export-driven growth | Various flagships are focused on boosting production in select commodities for increased regional/international exports<br><br>More specifically, the objective of Flagship 10 is to enhance cold chain, and airport/seaport capacity and efficiency to boost regional and international exports |
| To enhance the scope of Tanzania's benefits from strategic geographical opportunities through improved business environments | Various flagships strive to improve the business environment for export-oriented agriculture, including in digitalisation (Flagship 11), finance (Flagship 13), and export infrastructure/processes (Flagship 10)<br><br>More specifically, the objective of Flagship 7 is to remove agriculture-specific regulatory barriers to conducting business (including exports) |
| To facilitate increased business start-up and private sector involvement | Flagship 4 will support aspiring young entrepreneurs to start their own agri-SMEs; Flagship 7 will promote scaling of the AGCOT model to 3 new corridors, to promote private sector involvement and mitigate private sector operational challenges |

| | |
|---|---|
| To promote exports of services | N/A |
| To strengthen the implementation of FYDP III | AMP will be executed through an Agricultural Transformation Office that is specifically set up for implementation of the AMP, with support from multiple ministries |
| To ensure that regional and global agreements and commitments are fully integrated into national development | AMP is aligned with Tanzania's commitments to a number of regional agreements, as elaborated below |
| To strengthen the relationship between the sectors that are endowed with natural wealth and resources with other economic and social sectors | N/A |
| To strengthen the role of Local Government Authorities (LGAs) in bringing about development | AMP directly involves local Government as key stakeholders to facilitate programme-level execution across flagships |
| To strengthen the country's capacity to finance development | Flagship 13 will support improved access to finance for both smallholders and commercial players |

**It is critical to ensure that the AMP reflects and addresses Tanzania's international and climate commitments**. In terms of international commitments, five key commitments have been assessed and alignment with the AMP has been ensured. These five commitments are the Comprehensive Africa Agriculture Development Programme (CAADP), African Agribusiness and Agro-industries Development Initiative (3ADI), UN Food Systems Summit/Dialogue, Dakar 2 Summit and the Malabo Declaration. From a climate perspective, Tanzania's Nationally Determined Contribution has been assessed against the AMP, specifically against the relevant mitigation measures to reach the planned 30-35% emissions reduction by 2030.

***International Commitments***

**1. 2003 Comprehensive Africa Agriculture Development Programme** (led to the 2011 'Tanzania Agriculture and Food Security Investment Plan')

*Table 32: Link between AMP and CAADP*

| **Pillars** | **Masterplan** |
|---|---|
| Extending the area under sustainable land management and reliable water control systems | Flagship 1 will support expanded area under irrigation, for food and feed<br><br>Flagship 3 will support mapping and placing land under restoration to improve resilience<br><br>Flagship 14 will support increased access to and optimised use of high potential land |
| Improving rural infrastructure and trade-related capacities for market access | Flagship 7 will facilitate the removal of agriculture-specific barriers to conducting business (including exports), and promote PPP agreements for infrastructure development<br><br>Flagship 10 will facilitate regional and international export by creating a conducive environment for private sector to upgrade cold chain infrastructure, and by promoting PPP for optimisation of airport and seaport facilities |
| Increasing food supply, reducing hunger, and improving responses to food emergency crisis | Flagship 6 will support the development of traditional cash crops and major food crops through board-led excellence<br><br>Flagship 15 will support strengthening the early warning system to monitor food resilience |
| Improving agriculture research, technology dissemination and adoption | Flagship 2 will support the acceleration of Government seed production and support private seed producers (including through R&D)<br><br>Flagship 3 will support mapping and placing land under restoration to improve resilience<br><br>Flagship 5 includes livestock research for creation of a new improved indigenous cattle breed<br><br>Flagship 12 will support extension services to more effectively disseminate latest ag. technologies and train smallholders on climate-smart practices |

**2. 2010 African Agribusiness and Agro-industries Development Initiative** (3ADI)

*Table 43: Link between AMP and 3ADI*

| **Goals** | **Masterplan** |
|---|---|
| Skills and technologies needed for the postproduction segments of agriculture value chains | Flagship 4 will support the incubation of agri-SMEs, some of which will specialise in post-harvest management and small- or medium-scale processing<br><br>Flagship 9 will support to add value to prioritised commodities, through the development of agro-processing zones |
| Innovative institutions and services | Flagship 11 will support the digitalisation of farmer registration and the entire agriculture ecosystem (including extension services, real-time market information, etc.)<br><br>The ATO is new institution tasked with overseeing the implementation of the AMP |
| Financing and risk mitigation mechanisms | Flagship 3 will facilitate increased access to financial services, both for smallholders and commercial ag. players |
| Enabling policies and provision of public goods | Flagship 7 will facilitate the removal of agriculture-specific barriers to conducting business (including exports) |

**3. 2021 UN Food Systems Summit/Dialogue** (led to the 2021 'Pathways for Sustainable Food Systems')

*Table 54: Link between AMP and the Pathways for Sustainable Food Systems*

| **Action tracks** | **Masterplan** |
|---|---|
| Ensuring access to safe and nutritious food for all | Flagship 6 will support the development of traditional cash crops and major food crops through board-led excellence<br><br>Flagship 8 will accelerate commercial production of specific commodities, which are prioritised for nutritional benefits (e.g., poultry for increased lean protein consumption)<br><br>Flagship 15 will support strengthening the early warning system to monitor food resilience |
| Shifting to sustainable consumption patterns | Flagship 3 will support mapping and placing land under restoration to improve resilience<br><br>Flagship 6 will support the development of traditional cash crops and major food crops through board-led excellence<br><br>Flagship 8 will accelerate commercial production of specific commodities, which are prioritised for given relatively more sustainable production (e.g., poultry and aquaculture)<br><br>Flagship 15 will support strengthening the early warning system to monitor food resilience |
| Boosting nature-positive production | Flagship 3 will support mapping and placing land under restoration to improve resilience |
| Advancing equitable livelihoods | Various flagships will support improved smallholder livelihoods, driven by productivity improvements and increased market access, including Flagship 4 to enhance access to quality inputs and markets via smallholder group formation and agri-SMEs, Flagship 12 to improve extension services, and Flagship 13 to increase access to finance |
| Building resilience to vulnerabilities, shocks, and stress | Flagship 1 will support expanded area under irrigation for food and feed<br><br>Flagship 3 will support mapping and placing land under restoration to improve resilience<br><br>Flagship 15 will support strengthening the early warning system to monitor food resilience |

**4. 2023 Dakar 2 'Feed Africa' Summit** (led to the 2023 'Food and Agricultural Delivery Compact')

*Table 65: Link between AMP and the Dakar 2 Food and Agricultural Delivery Compact*

| **Value chain and investment goals** | **Masterplan** |
|---|---|
| Reduce wheat import bill | Flagship 6 will support the development of traditional cash crops and major food crops through board-led excellence<br><br>Flagship 8 will accelerate commercial production of 5 specific commodities, including wheat<br><br>Wheat is selected as a prioritised commodity across the AMP |
| Reduce sunflower and soyabean import bill | Flagship 6 will support the development of traditional cash crops and major food crops through board-led excellence<br><br>Flagship 8 will accelerate commercial production of 5 specific commodities, including soyabeans<br><br>Soyabean is selected as a prioritised commodity across the AMP |
| Increase horticulture production by 40% | Fruits (bananas, avocados) and vegetables (tomatoes, cassava, Irish potatoes) are selected as priority commodities for the AMP |
| Produce 742 tonnes of red meat and double domestic supply of milk and dairy products | Flagship 5 will support increased production to ~1,300 tonnes of red meat and will 2X dairy production<br><br>Red meat and dairy are selected as prioritised commodities across the AMP |
| Scale up seed delivery to 200k MT and fertiliser use to 1 mn MT | Flagship 2 will support the acceleration of Government seed production and support private seed producers<br><br>Flagship 8 will accelerate commercial production of 5 specific commodities, including fertilisers |
| Support 12,000 profitable enterprises across 12,000 villages across the country | Flagship 4 will directly support the creation of 12,000 youth-led agri-SMEs across the country; the Flagship will also support the incubation of an additional 3,000 agri-SMEs through third-party accelerator programmes<br><br>Flagship 7 will facilitate the removal of agriculture-specific barriers to conducting business (including exports)<br><br>Flagship 8 will accelerate commercial production of 5 specific commodities |

## 5. 2014 Malabo Declaration on Accelerated Agricultural Growth

*Table 76: Link between AMP and the Malabo Declaration*

| Commitment or Goals | Masterplan |
|---|---|
| Enhance investment finance, both public and private, to agriculture (e.g., 10% public expenditure on ag) | The AMP aims to commit to a higher budget for agriculture for implementation of the Flagship initiatives<br><br>Flagship 7 supports the deployment of additional PPPs for agriculture-specific projects |
| Ending hunger in Africa by 2025 (e.g., by doubling agricultural growth, halving PHL, reduce stunting by 10% and underweight by 5%) | Flagship 6 will support the development of traditional cash crops and major food crops through board-led excellence<br><br>Flagship 15 will support strengthening the early warning system to monitor food resilience |
| Ensure that the agricultural growth and transformation process is inclusive and contributes at least 50% to the overall poverty reduction target (e.g., sustain agricultural GDP growth of at least 6%, create job for at least 30% of young people in agricultural value chains | The AMP is guided by 10 principles, one of which is inclusion<br><br>The AMP includes 4 key targets for 2030, which include increases in smallholder incomes and agricultural GDP |
| Harness markets and trade opportunities, locally, regionally and internationally (e.g., triple inter-Africa trade | Flagship 7 will facilitate the removal of agriculture-specific barriers to conducting business (including exports)<br><br>Flagship 10 will facilitate regional and international export by creating a conducive environment for private sector to upgrade cold chain infrastructure, and by promoting PPP for optimisation of airport and seaport facilities |
| Reduce vulnerabilities of the livelihoods of our population through building resilience of systems (e.g., ensure that at least 30% of agricultural households are resilient to climate risks) | Flagship 3 will support mapping and placing land under restoration to improve resilience<br><br>Flagship 15 will support strengthening the early warning system to monitor food resilience |

### *Climate Commitments*

Per its NDC, Tanzania has committed to a 30-35% emissions reduction by 2030 from the business-as-usual scenario.[123] In order to reach this target, mitigation measures across various sectors have been outlined in the NDC. Most relevant to the AMP are those measures in the areas of agriculture, livestock, coastal/marine/fisheries and land use.

*Table 87: Link between AMP and Tanzania's climate commitments*

| **Mitigation measures** | **Masterplan** |
|---|---|
| ***Crops*** | |
| Upscaling the level of improvement of agricultural land and water resources management. | Flagship 1 will support expanded area under irrigation, for food and feed<br><br>Flagship 3 will support mapping and placing land under restoration to improve resilience |
| Increasing productivity in an environmentally sustainable way through, inter alia, climate-smart agriculture interventions. | Flagship 3 will support mapping and placing land under restoration to improve resilience , and transitioning smallholder farmers to regenerative agricultural practices |
| Promoting accessible mechanisms for smallholder farmers against climate related shocks, including crop insurances. | Flagship 13 will support improved access to finance, including insurance<br><br>Flagship 15 will support strengthening the early warning system to monitor food resilience |
| Strengthening agricultural research and development | Flagship 2 will support the acceleration of Government seed production and support private seed producers (including through R&D) |
| Strengthening knowledge systems, extension services and agricultural infrastructure to target climate actions, including using climate services and local knowledge. | Flagship 12 will support scaling and strengthening of extension services, for extension agents to be at the forefront of disseminating latest agriculture technologies to smallholders (including climate smart practices) |
| ***Livestock*** | |
| Promoting of local and modern climate resilience knowledge for sustainable pasture and rangeland management systems and practices. | Flagship 5 will support training of livestock keepers in sustainable fodder production (e.g., pasture rotation, best practices for carbon sequestration) |
| Enhancing climate resilience livestock infrastructures and services. | Flagship 5 will support construction of bore holes in community small ranches and storage facilities for hay (during prolonged drought conditions) |

[123] Tanzania Nationally Determined Contribution, July 2021

| | |
|---|---|
| Promoting livelihood diversification of livestock keepers. | Four different livestock commodities are selected as priority commodities in AMP (dairy, red meat, poultry, and fodder) |
| Promoting accessible mechanisms for livestock keepers against climate related shocks, including livestock insurances. | Flagship 13 will support improved access to finance for livestock keepers, including insurance |
| Enhancing livestock productivity through climate-smart interventions. | Flagship 5 will support construction of bore holes in community small ranches and storage facilities for hay (during prolonged drought conditions) |
| Strengthening livestock research and development. | Flagship 5 will support R&D for improved indigenous breeds with enhanced climate resilience and adaptability to TZ's specific agro-ecological zones |
| ***Coastal/marine/fisheries*** | |
| Strengthening the management of coastal and marine resources and monitoring systems. | Flagship 15 will support strengthening fish Monitoring, Control, and Surveillance |
| Promoting sustainable livelihood diversification for coastal communities | Aquaculture is selected as one of the priority commodities in the AMP |
| Improving early warning systems of both sea level rise impacts and extreme weather events. | Flagship 15 will support strengthening the early warning system to monitor food resilience |
| Increasing productivity in an environmentally sustainable way through inter alia climate-smart fisheries and aquaculture interventions. | Aquaculture is selected as one of the priority commodities in the AMP |
| Promoting accessible mechanisms for small-holder fishers and farmers against climate related shocks, including insurance. | Flagship 13. will support improved access to finance for fisherfolk, including insurance |
| Strengthening extension services and technologies for fisheries and aquaculture development. | Flagship 12. will support scaling and strengthening of extension services, for extension agents to be at the forefront of disseminating latest agriculture technologies to smallholders |
| ***Land use/human settlement*** | |
| Promoting resilient land use planning and management. | Flagship 3. will support mapping and placing land under restoration to improve resilience |

## F. Link to ASDP II priority investment areas and the midterm review recommendations

**To ensure continuity as the sector transitions from ASDP II to the Agriculture Master Plan, it is critical to map the bridge between both documents.** In particular, it is important to show how the components of ASDP II fit within the Master Plan and how the recommendations from the Mid-term-review of ASDP II are taken into consideration in the design of the AMP. The AMP itself builds on ASDP II, but goes further by detailing yearly funding needs and sources, yearly KPIs, clear responsibilities for each outcome, cost/impact assessment, the commodity lens, the set-up of the ATO to coordinate the governance, and strengthens the food systems lens.

*Table 108: Link between AMP and ASDP II MTR recommendations*

| **Recommendations** | **Masterplan** |
|---|---|
| **Component 1 – Sustainable water and land use management** | |
| Focus on irrigation rehabilitation to ensure the sustainability of constructed schemes. Consideration should be given to models that involve community-based models and the private sector | Flagship 1 supports both the development of new irrigation schemes their management and the strengthening of existing schemes |
| Invest in constructing and enhancing water sources for livestock, particularly boreholes | Flagship 5 Unlock red meat and dairy farmers' access to formal market channels |
| Speeding up and scaling the process of developing land use plans, and more importantly detailed land use plans for all villages, and strengthening laws for agricultural land protection | Flagship 14 Increase access and optimise use of high potential land |
| Focus on increasing adoption of CSA practices and technologies by sensitising farmers and beginning with low-cost practices | Flagship 3 Map and place land under restoration to improve resilience and increase the usage of sustainable practices |
| Incorporate soil management, conservation, and biodiversity aspects into the component, given their key role in ensuring sustainable agricultural practices | Flagship 3 Map and place land under restoration to improve resilience |
| **Component 2 – Enhanced agricultural productivity and profitability** | |
| Demonstrate a greater focus on food systems elements such as biofortification and food safety | Flagship 9 Enhance added value through the development of agro-processing zones |

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| | Flagship 15 Strengthen the early warning system to monitor food resilience |
| Target and prioritise value chains that are coherent with Tanzania's nutritional goals including protein-rich value chains and fruits and vegetables | Flagship 5 Unlock red meat and dairy farmers' access to formal market channels<br><br>Flagship 6 Develop traditional cash crops and major food crops through board-led excellence<br><br>Flagship 8 Accelerate the development of commercial activities in priority commodities<br><br>Commodities prioritised: poultry, aquaculture, dairy, fruits and vegetables |
| Invest in enhancing awareness and understanding of communities on diet diversification | Flagship 12 Strengthen and scale extension service |
| Invest in enhancing access to improved seeds including seed research, seeds subsidies, seeds tracking and monitoring | Flagship 2 Develop Government seed production and support private seed producers |
| Strengthen the existing fertiliser system including the farmer registry and distribution network at village levels | Flagship 11 Digitalise farmer registration and agriculture ecosystem<br><br>Flagship 4 Provide smallholders integrated services across the value chain |
| **Component 3 – Commercialisation and added value** | |
| Focus on reducing post-harvest losses and added value for crops and fisheries products including the warehouse receipt system | Flagship 9 Enhance added value through the development of agro-processing zones<br><br>Flagship 10 Facilitate regional and international export by creating a conducive environment for private sector to upgrade cold chain infrastructure and promoting PPP for optimisation of airport and seaport facilities |
| Broaden the focus of losses to cover end-to-end value chain, including losses in food processing | Flagship 9 Enhance added value through the development of agro-processing zones |
| Strengthen the link between farmers and agro-processors to increase the added value of agricultural products<br><br>• Continue to improve the rural road network and electricity | Flagship 4 Provide smallholders integrated services across the value chain (through strengthening and creation of farmer groups and SME ecosystem) |

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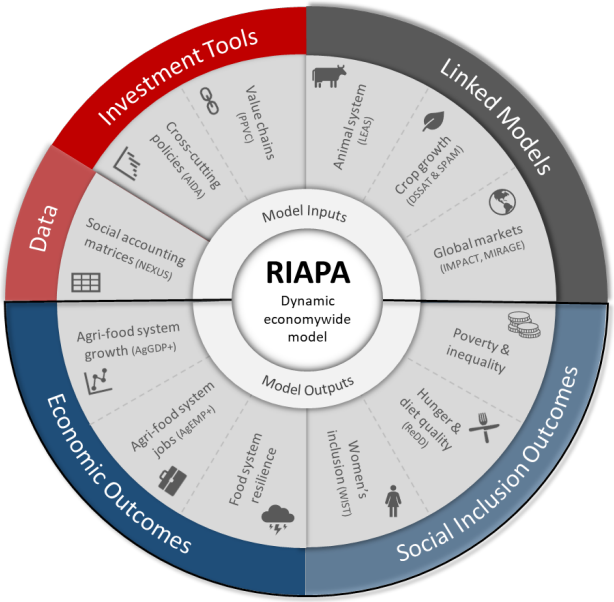
| infrastructure to connect farmers to agro-processors<br>• Extend livestock processing industries to other zones with high livestock or livestock population production | Flagship 9 Enhance added value through the development of agro-processing zones |
| **Component 4 – programme implementation, sector enablers, coordination and M&E** | |
| Communicate to stakeholders including those at LGA levels on the positioning of ASDP II as the overarching framework for agricultural sector development | The governance of the AMP will illustrate the link to local Government<br>The ATO will have a dedicated coordination role to ensure this link with local Government |
| Strengthen the coordination by ensuring that the programme is anchored and coordinated in well-capacitated unit | The ATO will serve as the central unit to coordinate the implementation of the Master Plan |
| Ensure funding availability for coordination, e.g., mechanism where DPs contribute a percentage of the project budget to the fund | The ATO will be appropriately funded to carry out its mandate |
| Ensure that Technical Working Groups (TWGs) are established and resourced to function well. | To be addressed in the governance |
| Streamline indicators and ensure that only relevant and traceable indicators are retained for the remaining five years | Each flagship will have yearly KPIs associated with the initiatives |
| Enhance the capacity for data collection and digitisation at local Government levels e.g., increasing access to extension staff | Flagship 11 Digitalise farmer registration and agriculture ecosystem<br>The ATO will work closely with the M&E departments of the different ministries |
| Design a mechanism to track private sector financing in the agricultural sector | The Master Plan identifies clear financing needs from the private sector and the ATO tracks large financing |
| Enhance the availability financial services (credits, insurance etc.) | Flagship 13 Enhance access to financial services |

*See the flagships sections for a full description of the each of the flagships.

## G. Modelling the Economywide Impacts of the Masterplan

The Agriculture Master Plan (AMP) aims to transform, not only the agricultural sector itself, but also the broader agrifood system and economy. A dynamic economywide model was used to translate how each of the Flagship investment areas raises production and incomes in the targeted agricultural and processing sectors, and how this, in turn, generates additional incomes and jobs throughout the value chain and across the economy. The economywide model used to evaluate the potential benefits of the AMP is the RIAPA Data and Modelling System developed by the International Food Policy Research Institute (IFPRI) RIAPA is specially designed to capture the detailed characteristics and workings of Tanzania's agrifood system, and to track how changes in the agrifood system affect household and individual level outcomes, such as incomes, poverty, and undernourishment. Figure 1 provides a conceptual framework showing the different components of the RIAPA modelling system.

RIAPA Model Framework




Source: IFPRI RIAPA model (www.ifpri.org/project/riapa-model)

The core component of RIAPA is a dynamic computable general equilibrium (CGE) model. It separates the Tanzanian economy into 86 production sectors, 36 of which are in primary agriculture and 17 are in agro-processing. Primary agriculture, for example, includes, maize farming, whereas maize milling is in agro-processing with the broader manufacturing sector. Producers in each sector seek to maximise profits by combining land, labour, capital, and other inputs, based on unique sectoral technologies and relative input prices. Farmers in the model can reallocate land across crops in response to changing prices. For example, if a Flagship's investments cause maize production to rise and prices to fall, then farmers may reallocate some of their maize land to other crops. They may also shift some of their labour to nonfarm activities, since workers in the model are able to migrate between sectors based on relative wage and self-employment earning opportunities. The model also captures unpaid family and informal sector jobs, as well as farm households' production for their own consumption. The model can track how investments that increase productivity for smallholder maize farmers could lead to them consuming more maize within their own households, greater marketed supply of maize, increased crop diversification, and the migration of members of the maize farming household to work in other parts of the economy. The model's economywide scale, coupled with its detailed treatment of sector level production and employment, makes it an effective tool for assessing how the AMP investments could transform Tanzania's agricultural sector, create new off-farm job opportunities within the agrifood system, and encourage faster national economic growth and structural change.

The core CGE model also separates the entire Tanzanian population in representative household groups. All households captured in the national Household Budget Survey are divided across rural-urban location, farm-nonfarm status, and per capita consumption

expenditure quintiles. Each household group has unique income and consumption patterns based on the information from the survey. For example, poor rural farm households tend to earn more of their income from farming and informal sector work, and they spend more of their income on food consumption and basic needs goods and services. As such, investments in agriculture are generally more likely to benefit poor rural farm households, as well as net food consumers, which includes most poor urban households. Thus, in addition to being economywide, a second key feature of RIAPA is its ability to track how changes in sectoral production and employment translate into changes in incomes and consumption for different household groups.

A third feature of RAIPA is that the CGE model is linked to a survey-based microsimulation model that allows it to track changes in household-level outcomes, such as poverty, undernourishment, and diet quality. This is important, because investments that are found to be the most cost-effective at driving economic growth and job creation, may not also be the most effective at reducing poverty or food insecurity. How strong the link is between a sector's growth and its impact on household outcomes depends on which kinds of farms, firms or workers benefit from the sector's growth process, and what kinds of households are more likely to benefit from the increased supply and lower prices for that sector's output. The combination of a detailed economywide and survey-based microsimulation models allows RIAPA to captures these linkages in a comprehensive and considerably detailed data-driven way.

The RIAPA model was used to evaluate the potential future impacts of the AMP on a range of targeted outcomes. These included the AMP's contributions to agricultural and total GDP and to household poverty, undernourishment, and diet quality. In the first stage of the analysis, RIAPA was used to generate a baseline or "business-as-usual" growth pathway for Tanzania. This assumed that, in the absence of the AMP, the economy and agricultural sector would continue to grow and develop in patterns that are consistent with recent historical trends. Key inputs to the baseline included population and labour force projections to 2030; production and productivity changes for individual crops and animals over the last decade (2012-2022); and data from official national accounts on GDP growth rates by sector (also for 2012-2022).

In the second stage of analysis, the detailed information behind the Flagships was used to design model scenarios that capture major impact channels and investment areas. Flagship information on intermediate outputs and investment costs were used to estimate how sector-level production, crop land area, and animal stocks might change if the Flagships were fully implemented in. Flagship scenarios were run separately to generate Flagship-specific benefit-cost ratios. The Flagships were also run together to capture any possible spillovers or interactions between flagships and to assess the overall impact of the AMP. Three Flagships were not included the analysis: Flagship 6 (Boards); Flagship 7 (Ease of Doing Business); and Flagship 15 (Warning Systems). This is due to the fact that these flagships' impact is already modelled in other flagships and counting them again would lead to double counting.

## H. Crop suitability analysis

To define the crops considered in the analysis, stakeholder input and key agricultural commodities for Tanzania were taken into consideration. The commodities considered in the analysis are avocado, banana, cashew, cloves, coffee, cotton, green gram, Irish potato, kidney beans, maize, paddy, pigeon peas, seeds, sesame, sisal, sorghum, soya beans, sunflower, tomatoes, and wheat.

To ensure only available land is considered for crop production, several land-use filters have been applied to exclude protected areas (e.g., national parks), existing forests (no deforestation), urban areas and land areas that are too steep for mechanised farming. Additionally, existing cropland has been excluded for land expansion analysis.

Each crop has specific climate (e.g., temperature and precipitation) and soil (e.g., soil pH and soil depth) requirements in the form of a range, with a minimum and a maximum. Crops with a wide range are typically suitable to be grown in many climates and places. To assess land suitability, crop requirements were compared in a geospatial analysis to local environmental conditions in terms of soil and climate. Temperature and precipitation are based on average values. This means extreme climate events that may influence crop location (e.g., flooding) are not considered. An overall suitability score is created based on the suitability of a given land area across each of the conditions; land areas with a high score across all dimensions are considered highly suitable, while land areas with suitability in some conditions are considered moderately suitable. Suitability is mapped spatially, in addition to being aggregated to the regional level.


*Figure 96 Highlights the suitability mapping process*

This analysis is meant to provide information on opportunities for land expansion based on agronomic potential. As such, it does not factor in farming practices (e.g., input usage, irrigation) or economic

**Agriculture:** The practice of cultivating crops, raising livestock, and harvesting fisheries in the production of food, fibre, and other products used to sustain and enhance human life

**Arable land:** This refers to land potentially fit for agriculture.

**Cultivated land:** This refers to land under currently being used for production.

**Village land**: This refers to land which is owned by the village and administered by the village council.

**Land degradation:** This refers to the biophysical disturbance which inhibits the ability of land to perform its normal function of supporting crop growth, livestock development and managing biodiversity.

**Regenerative agriculture**: This refers to farming and grazing practices which rebuild soil organic matter, restore degraded soil biodiversity and improve overall soil health. Examples include agroforestry, which is planting of trees on cropland, silvopasture, which is planting of trees on pastureland, reduced tillage, which is limiting the preparation of soil though mechanical tillage, integrated/rotational grazing, which is moving grazing livestock between pastures

**Major food crops**: This includes maize, rice/paddy, cassava, pulses/beans, sunflower, soya beans, sorghum and wheat.

**Traditional cash crops**: This includes cashew nuts, cotton, coffee, sisal, etc.

**Horticulture crops**: This includes four categories; vegetables e.g., cabbage, fruits e.g., avocados, spices e.g., cloves and flowers.

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