



**THE UNITED REPUBLIC OF TANZANIA  
MINISTRY OF AGRICULTURE**



# **TANZANIA AGRICULTURAL MECHANIZATION STRATEGY II (TAMS II) (2025/2026 – 2035/2036)**

**JANUARY, 2026**



## List of Acronyms

2WTs	Two Wheel Tractors
4WTs	Four Wheel Tractors
AP	Action Plan
ACTN	African Conservation Tillage Network
ADB	Africa Development Bank
AEZ	Agro-Ecological Zone
AEZ 1	Southern Highland Zone: Iringa, Mbeya, Njombe, Rukwa, Katavi, Songwe and Ruvuma
AEZ 2	Southern Zone: Lindi and Mtwara
AEZ 3	Eastern Zone: Morogoro, Tanga, Coastal region and Dar es salaam
AEZ 4	Central Zone: Dodoma and Singida
AEZ 5	Western Zone: Kigoma and Tabora
AEZ 6	Lake Zone: Mwanza, Kagera, Geita, Simiyu, Shinyanga and Mara
AEZ 7	Northern Zone: Arusha, Manyara and Kilimanjaro
AGITF	Agricultural Inputs Trust Fund
AMP 2050	Tanzania Agriculture Master Plan 2050
ASLMs	Agricultural Sector Lead Ministries
ASDP II	Agricultural Sector Development Programme II
AU	African Union
BBT	Building a Better Tomorrow
BBT - YIA	Building a Better Tomorrow- Youth and Women Initiative for Agribusiness
CAMARTEC	Centre for Agricultural Mechanization and Rural Technology
CSA	Climate Smart Agriculture
CBOs	Community Based Organizations
CA	Conservation Agriculture
CAADP	Comprehensive Africa Agriculture Development Programme
CAG	Controller and Auditor General
COSTECH	Tanzania Commission for Science and Technology
CPB	Cereals and Other Produce Board
DPs	Development Partners
DMV	Division of Agricultural Mechanization and Value Addition
DAP	Draft Animal Power
GDP	Gross Domestic Product
EAC	East African Community
ERB	Engineers Registration Board
EFTA	Equipment for Tanzania Limited
FFBS	Farmers Field Business School
F-SAMA	Framework for Sustainable Agricultural Mechanization for Africa
FYDP	Five Year Development Plan
FYER	Five Year Evaluation Report
ICTs	Information and Communication Technologies
IET	Institution of Engineers Tanzania

## List of Acronyms...

IoT	Internet of Things
KMTC	Kilimanjaro Machine Tools Company
LGA	Local Government Authority
LTPP	Long Term Perspective Plan
MTR	Mid-term Review
MDAs	Ministries, Independent Departments and Executive Agencies
MEL	Monitoring, Evaluation and Learning
MLF	Ministry of Livestock and Fisheries
MLHHS	Ministry of Lands, Housing and Human Settlements Development
MoA	Ministry of Agriculture
MoCDGWSG	Ministry of Community Development, Gender, Women and Special Groups
MoE	Ministry of Energy
MoEST	Ministry of Education, Science and Technology
MoF	Ministry of Finance
MoU	Memorandum of Understanding
MoW	Ministry of Water
MIT	Ministry of Industry and Trade
MNRT	Ministry of Natural Resources and Tourism
NAMSC	National Agricultural Mechanization Steering Committee
NAP 2013	National Agriculture Policy
NAMTC	National Agricultural Mechanization Technical Committee
NBAA	National Board of Accountants and Auditors
NBS	National Bureau of Statistics
NFRA	National Food Reserve Authority
NRDS	National Rice Development Strategy
PASS	Private Agricultural Sector Support
PO-RALG	President's Office, Regional Administration and Local Government
POPI	President's Office, Planning and Investment
PMO	Prime Minister's Office
PPP	Public Private Partnership
R & D	Research and Development
RBE	Result Based Evaluation
SA	Strategic Area
SADC	Southern African Development Community
SI	Strategic Interventions
SO	Strategic Objectives
STI	Science, Technology, and Innovation
SIDO	Small Industries Development Organization
SUA	Sokoine University of Agriculture
SWOC	Strengths, Weaknesses, Opportunities, and Challenges
SMS	Subject Matter Specialists

## List of Acronyms...

---

SAM	Sustainable Agricultural Mechanization
SDGs	Sustainable Development Goals
TADB	Tanzania Agricultural Development Bank
TAMS II	Tanzania Agricultural Mechanization Strategy II
TAMS I (2006 – 2016)	Tanzania Agricultural Mechanization Strategy I
TBS	Tanzania Bureau of Standards
TCDC	Tanzania Cooperative Development Commission
TFC	Tanzania Federation of Cooperatives
TIB	Tanzania Investment Bank
ToC	Theory of Change
DIRA 2050	Tanzania Development Vision, 2050
TEMDO	Tanzania Engineering and Manufacturing Design Organization
TIRDO	Tanzania Industrial Research and Development Organization
TPSF	Tanzania Private Sector Federation
UAV	Unmanned Aerial Vehicle
URT	United Republic of Tanzania
VETA	Vocational Education Training Authority
VPO	Vice President's Office

## Foreword



Agriculture is the backbone of Tanzania's economy, providing livelihoods for most of our population and contributing significantly to national development. However, the sector continues to face challenges that hinder its full potential, including low productivity, limited access to modern technologies, and inefficiencies in farming practices. To address these challenges, it is imperative that we adopt sustainable solutions that not only enhance productivity but also promote resilience and inclusivity in the agricultural sector.

Tanzania has an existing strategy, the Tanzania Agricultural Mechanization Strategy TAMS I (2006-2016), which has been reviewed to inform the development of Tanzania Agricultural Mechanization Strategy II (TAMS II 2025/2026 – 2035/2036).

The Tanzania Agricultural Mechanization Strategy II (TAMS II) serves as a roadmap for accelerating the transformation of agriculture through mechanization. It outlines strategic interventions aimed at improving access and availability of agricultural machinery and technologies; improving manufacturing, commercialization, maintenance of machinery and increasing financing in the Agricultural Mechanization; promoting Climate Smart Agriculture technologies and practices; improving research and development, training and extension; and policy and legal frameworks dealing with Agricultural Mechanization. This strategy is guided by the programmes and policy orientations formulated at the national, regional, and international levels. These include programmes and policies such as Tanzania Development Vision 2050 (DIRA 2050), National Agriculture Policy 2013 (NAP 2013), Tanzania Agriculture Master Plan 2050 (AMP 2050), Agriculture Sector Development Programme II (ASDP II), Agenda 10/30, Framework for Sustainable Agricultural Mechanization for Africa (F-SAMA), The Comprehensive Africa Agriculture Development Programme 2026 - 2035 (CAADP), Agenda 2063 (The Africa We Want), and Sustainable Development Goals (SDGs).

The development of TAMS II has been a collaborative effort involving a wide range of stakeholders, including farmers, Private Sector actors, academia, Non-Governmental Organizations (NGOs), and Development Partners. Their invaluable contributions have ensured that this strategy is inclusive, evidence-based, and responsive to the diverse needs of the agricultural sector.

I am proud to present this strategy, which reflects our collective commitment to transforming Tanzania's agriculture. I urge all stakeholders to engage in its implementation and support its initiatives actively. Together, we can unlock the potential of mechanization to drive productivity, enhance livelihoods, and ensure the sustainable development of our agricultural sector.

A handwritten signature in black ink, appearing to read 'Daniel Godfrey Chongolo'.

**Hon. Daniel Godfrey Chongolo (MP)**

**Minister for Agriculture**

## Acknowledgement



The Ministry of Agriculture (MoA) extends its heartfelt appreciation to all who contributed their ideas, resources, and time to the development of the Tanzania Agricultural Mechanization Strategy II (TAMS II). Their invaluable input was essential to the success of this initiative. Special recognition is given to the interviewees, including farmers, extension officers, and stakeholders from the private and Public Sectors, such as representatives of various institutions, agricultural machinery suppliers, mechanization service providers, academia, Non-Governmental Organizations (NGOs), and Development Partners. The Ministry also gratefully acknowledges the technical assistance the Food and Agriculture Organization of the United Nations (FAO) provided.

Special thanks are extended to the Director and Assistant Directors of the Agricultural Mechanization and Value Addition Division, MoA, for their coordination, guidance, and leadership on the task performed. The MoA also acknowledges the technical team's efforts in data collection, compilation, data analysis, and strategy writing.

Furthermore, the MoA would like to appreciate the invaluable insights and information provided by all stakeholders who participated in the several workshops conducted in Morogoro, Iringa, and Dodoma, which resulted in an improved and enriched product.

I encourage everyone to actively participate in the implementation of this strategy, ensuring its success for the benefits of all.

A handwritten signature in black ink, consisting of a large, stylized 'G' followed by a horizontal line and a vertical stroke at the end.

**Gerald Geoffrey Mweli, ndc**

**Permanent Secretary, Ministry of Agriculture**

# Executive Summary

## Introduction

The development of Agricultural Mechanization in Tanzania has been slow, hindered by various factors such as low purchasing power among small-scale farmers, high machinery costs, limited availability of agricultural credit, low availability of trained operators and suitable machinery packages. Under the centrally planned economy, Government interventions like tractor hire schemes, affordable credit for farmers, and local manufacturing of tools did help to increase mechanization. However, the approach was not sustainable and had only limited coverage. This led to the review of the existing strategy (TAMS I – 2006 – 2016) in order to come up with TAMS II (2025 – 2035), which addresses the aforementioned challenges.

The strategy attempts to address the constraints found in accessing Agricultural Mechanization, aiming to enable mechanization to contribute more effectively to increasing agricultural production and productivity.

The strategic areas of the mechanization strategy fall under the four components of ASDP II and 15 flagships of the Tanzania Agriculture Master Plan 2050 namely:

Component 1: Sustainable Water and Land Use Management - (Flagship 1, 3, 6, 14).

Component 2: Enhanced Agricultural Productivity and Profitability - (Flagship 2, 3, 4, 5, 12, 15).

Component 3: Commercialization and Value Addition - (Flagship 4, 9, 10).

Component 4: Sector Enablers, Coordination and Monitoring, Evaluation and Learning - (Flagship 2, 4, 7, 11, 12, 13, 14).

## Vision, Mission and Overall Objective

### *Vision*

The vision of TAMS II is to revolutionize agriculture by integrating advanced machinery and technology to drive sustainable agri-food systems and improve livelihoods.

### *Mission*

The mission is to create an enabling environment for scaling up appropriate Agricultural Mechanization to increase production, productivity, efficiency, and climate resilience; enhance food security, promote commercialization, and contribute to economic development and GDP growth.

### *Overall Objective*

TAMS II aims to enhance mechanization's role in achieving long-term agricultural development, while acknowledging that mechanization must be part of a broader strategy that includes institutional improvements, technology adoption, infrastructure development, and smallholder commercialization.

## Executive Summary...

---

### Strategic Areas and Strategic Objectives

The strategy is presented in five strategic areas which are;

**Strategic area 1:** Availability and accessibility of agricultural machinery and technologies

**Strategic objective 1:** Improve availability and accessibility of agricultural machinery, technologies and services

The specific objectives are to:

- Stimulate demand for agricultural machinery through promotions,
- Enhance Public and Private Sectors engagement in delivering mechanization services, and
- Strengthen the capacity of various actors along the Agricultural Mechanization value chain.

**Strategic area 2:** Manufacturing, Commercialization and Financing

**Strategic objective 2:** Improve manufacturing, commercialization, maintenance of machinery and increasing financing in Agricultural Mechanization

The specific objectives are to:

- Improve local manufacturing of agricultural machinery and equipment through innovation, technology transfer and commercialization,
- Strengthen maintenance services and after-sales support to the agro machinery dealers and local mechanics in the seven agroecological zones, and
- Increase financing and investment in mechanization.

**Strategic area 3:** Climate Smart Agriculture

**Strategic objective 3:** Promote Climate Smart Agriculture technologies and practices

The specific objectives are to:

- Increase the use of CSA technologies that contribute to the rural population's sustainable livelihoods,
- Strengthen the capacity of CSA extension/ advisory workers, and
- Create the enabling environment for scaling adoption of CSA technologies and practices.

**Strategic area 4:** Research and Development (R&D), Training, and Extension

**Strategic objective 4:** Improve Research and Development (R&D), Training and Extension in Agricultural Mechanization

The specific objectives are to:

- Strengthen Research and Development (R&D) in Agricultural Mechanization,
- Strengthen training in Agricultural Mechanization, and
- Strengthen Agricultural Mechanization extension services.

## Executive Summary...

---

**Strategic area 5:** Policy and Legal Framework

**Strategic objective 5:** Improve policy and legal frameworks

The specific objectives are to:

- Harmonize policies, acts, regulations and plans to attract investments in Agricultural Mechanization,
- Strengthen legal compliance among stakeholders, and
- Support monitoring, evaluation and learning on Agricultural Mechanization.

### Institutional Framework

The management of the strategy will be under two committees which will be formed in the Ministry dealing with Agriculture. These are (i) National Agricultural Mechanization Steering Committee (NAMSC) and (ii) National Agricultural Mechanization Technical Committee (NAMTC). The NAMSC will be led by the Permanent Secretary in the Ministry dealing with Agriculture while the NAMTC will be led by the Director responsible for Mechanization, in the Ministry dealing with Agriculture.

The implementation of TAMS II at national level will be streamlined within the normal operations of Ministry dealing with agriculture, in the Division dealing with Agricultural Mechanization. The directorate will be responsible for the overall supervision of the TAMS II implementation. Activities to be carried out will include: (i) developing TAMS II implementation plan for the strategic areas; (ii) compilation of TAMS II budget for each financial year; (iii) Monitoring, Evaluation and Learning of physical and financial performance of the strategic areas.

### Monitoring, Evaluation and Learning

The implementation of TAMS II needs to be closely monitored and evaluated. Therefore, there will be a Monitoring, Evaluation and Learning system that will play the following major roles:

- i. Design, coordination and implementation of the Monitoring, Evaluation and Learning framework, research, and learning by developing a systematic framework to improve the qualitative and quantitative evidence gathered through TAMS II lifetime;
- ii. Providing technical assistance to the implementation of TAMS II, particularly in relation to monitoring, reporting and governance issues;
- iii. Steering and controlling through regular tracking and reporting of progress for informed decisions underlying the effective and efficient coordination of TAMS II; and
- iv. Accountability against plans and budget resources for the implementation of TAMS II.



## Executive Summary...

---

### Financing

Financial estimates of Tshs. 788 billion is projected for implementing the various activities over the first five years (2025/26-2029/30). These are only indicative to show the funding needs. The budget for the next five years (2030/31-2034/35) will be prepared after reviewing the performance of the first five years.

The implementation of the strategy will depend on financial support from Government budget, private sector, international community as well as individual contributions. However, a coordinated approach is required to ensure that the collected funds are used to address the mechanization issues presented in this strategy. The Government will be responsible for mobilizing and managing funds from various sources. The TAMS II funds activities will be coordinated through the ministry dealing with agriculture in collaboration with other sector lead ministries and other stakeholders.

# Table of Contents

<b>List of Acronyms</b> .....	i
<b>Foreword</b> .....	iv
<b>Acknowledgement</b> .....	v
<b>Executive Summary</b> .....	vi
<b>Table of Contents</b> .....	x
<b>1. INTRODUCTION</b> .....	1
1.1 Background .....	1
1.2 Need for Agricultural Mechanization .....	1
1.3 Rationale for TAMS II Strategy.....	3
1.4 Methodology.....	4
1.5 Scope.....	5
<b>2. SITUATION ANALYSIS OF AGRICULTURAL MECHANIZATION</b> .....	6
2.1 State of Agricultural Mechanization in Tanzania .....	6
2.2 Constraints of Agricultural Mechanization Stakeholders.....	7
2.3 Achievements and Challenges of TAMS I .....	8
2.4 The Current Orientation of the Government on Agricultural Mechanization .....	12
2.5 Key Agricultural Mechanization Issues .....	15
<b>3. STRATEGIC AREAS AND INTERVENTIONS</b> .....	16
3.1 Vision and Mission .....	16
3.2 Strategic Areas .....	16
3.3 Agricultural Machinery Needs .....	26
<b>4. IMPLEMENTATION ARRANGEMENTS</b> .....	33
4.1 Key Implementing Actors .....	33
4.2 Institutional Framework.....	36
4.3 Operation Plan - Work Plan and Financial Estimates of TAMS II .....	37
4.4 Monitoring, Evaluation and Learning (MEL) .....	39
4.5 Risk Management .....	44
<b>Glossary of Terms</b> .....	45
<b>References</b> .....	47



## Annexes

---

<b>ANNEXES</b> .....	48
Annex 1: Mechanization Power Type Ratio Per Agro Ecological Zones.....	48
Annex 2: SWOC Matrices.....	48
Annex 3: Strategic Objective Matrices .....	52
Annex 4: Work Plan.....	62
Annex 5: Proposed Budget.....	63
Annex 6: Quarterly Progress Report Format .....	73
Annex 7: Quarterly Progress Report Format – Financial Report .....	73
Annex 8: Financial Performance Report.....	74

## List of Tables

---

Table 1:	Types and Number of Machinery and Implements in Use .....	6
Table 2:	Number of Draught Animals and Implements in Tanzania .....	7
Table 3:	Agricultural Mechanization Stakeholders and their Constraints .....	8
Table 4:	Challenges of TAMS I .....	9
Table 5:	Evolution of Cultivated Area (Ha) at Different Agroecological Zones at Short, Medium and Long Terms.....	27
Table 6:	Evolution of the Cultivated Areas (Ha) of the Main Crops at the Short, Medium and Long Terms .....	28
Table 7:	Type of Mechanization Power Ratio Targets for Short, Medium and Long Terms.....	28
Table 8:	Yield (T/Ha) of the Main Crops at Short, Medium and Long Terms .....	29
Table 9:	Shares of Cultivated Areas (%) by Types of Harvesting and Threshing Means at Short, Medium and Long Terms .....	30
Table 10:	Evolution of the Ratios of Production of the Main Crops Stored Locally (At Farm and Community Level) at Short, Medium, and Long Term .....	30
Table 11:	Evolution of Machinery Needs at Short, Medium and Long Term .....	31
Table 12:	Evolution of Human Power and Animal Draught Needs at Short, Medium and Long Term.	32
Table 13:	Stakeholder’s Analysis Matrix.....	33
Table 14:	Financing Estimates for the Tanzania Agricultural Mechanization Strategy II (TAMS II).....	38
Table 15:	Performance Reporting Schedule .....	42
Table 16:	External Reporting Plan .....	43
Table 17:	Risk Management Plan .....	44



## List of Figures

---

Figure 1: Comparison of 4WT, 2WT and DAP use in 2015 and 2023 (Source: MoA 2024) .....	2
Figure 2: Relationship Between Agricultural Mechanization Issues and Strategic Areas .....	18
Figure 3: The National Agricultural Mechanization Steering Committee and National Agricultural Mechanization Technical Committee .....	37
Figure 4: Theory of Change of MEL .....	41

# CHAPTER ONE: INTRODUCTION

## 1.1 Background

Tanzania has a total area of 945,239 km<sup>2</sup>. It lies between latitudes 10° and 12° South and longitudes 29° and 41° East. The country is bordered in the north by Kenya and Uganda, in the east by the Indian Ocean, in the south by Mozambique and Malawi, and in the west by Rwanda, Burundi, the Democratic Republic of Congo, and Zambia. According to the 2022 census (URT, 2022), the population of Tanzania Mainland was 59.8 million people, increasing at an annual growth rate of 3.2%.

The landscape in Tanzania comprises mainly three physiographic regions, namely: islands and the coastal plains to the east, the inland saucer-shaped plateau, and the highlands in the north and south, with altitudes ranging between zero and 2,000 m above mean sea level. The climate is tropical, with temperatures ranging between 20° C and 30° C in most parts of the country and between 10° C and 20° C in the highlands (TMA, 2021). Tanzania has two major rainfall regimes: unimodal and bi-modal. Unimodal regime includes areas that coincide with a single passage of rainfall in a year. These include the southern, southwestern, central and western parts of the country, which receive rainfall from November to April or May. Bimodal areas receive two distinct rainfall seasons (long rainy season and short rainy season) in a year; these include the northern coast, north eastern highlands, and Lake Victoria areas. The long rainy season (locally called *Masika*) starts in March and continues through May. The short rainfall season (locally called *Vuli*) begins in October and continues through December. January and February are the transition periods (relatively dry) for bimodal areas, while June, July, August and September are dry months for the entire country (TMA, 2021). The annual rainfall varies from 500 mm to 1,000 mm over most parts of the country. The highest rainfall, 1,000 mm to 2,000 mm, occurs in the north-east of the Lake Tanganyika Basin and the southern highlands.

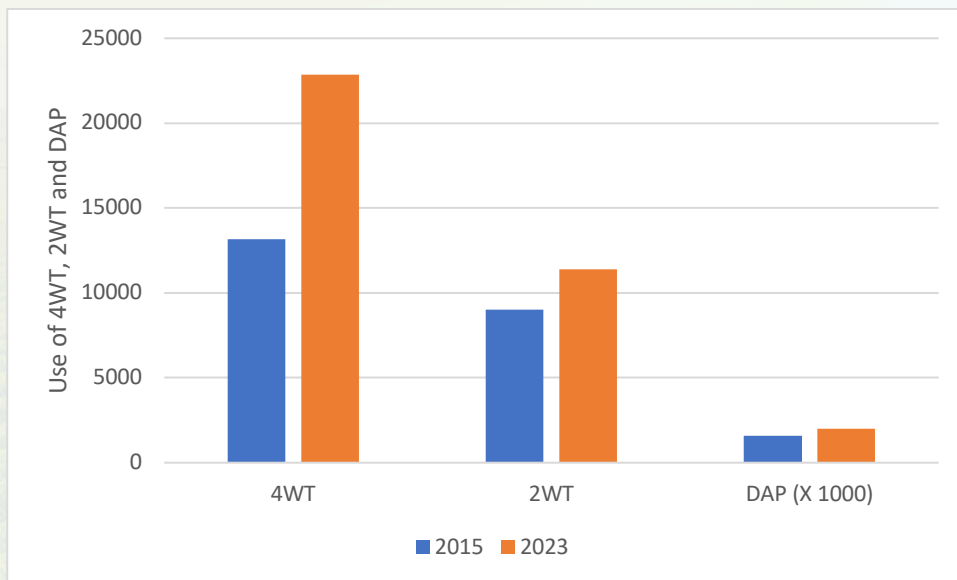
Tanzania has a variety of land suitable for cultivation, ranging from fertile soils in the highlands to more arid regions in the low-altitude plateaus. Tanzania predominantly depends on the agricultural sector for its economic growth and employment opportunities. Despite its high role in the nation, the productivity level has been relatively low compared to other sectors. Several measures have been taken to improve productivity, including using technology in farming. Among these technologies is Agricultural Mechanization. Using mechanical technologies in farming operations has proven to have great potential in increasing yield, reducing drudgery, and increasing the area under production. The overall level of Agricultural Mechanization in Tanzania is still very low. More effort is needed to promote the Agricultural Mechanization level for the sustainability of agricultural development.

## 1.2 Need for Agricultural Mechanization

Tanzania is predominantly dependent on agriculture for her economic growth. In 2024, Agriculture contributed about 26.3 % of the country's GDP (MoF, 2025). Despite its importance to the economy, the production increase has been inconsistent yearly. The growth rate of agriculture for the past several years (4-5%/year) has failed to achieve the national target (6-10%/year), and the poverty level currently stands at 42.9% (WB, 2023). Productivity growth, particularly on small farms, is derived from agricultural intensification, and this often involves the increased application of modern inputs, such as improved seeds or agrochemicals, and the use of machinery (Diao et al., 2016).

## Chapter One: Introduction...

Agricultural Mechanization embraces the manufacture, distribution and operation of all types of tools, implements, machines and equipment for agricultural land development and farm production as well as for harvesting and primary processing of agricultural produce (Gifford, 1981). The average area cultivated using the hand hoe, animal draft, and tractor power was estimated to be 44, 30, and 26%, respectively (MoA, 2024). This is an increment of the level of Agricultural Mechanization in Tanzania because in previous years i.e., in 2000 the level was 80, 15, and 5%; in 2015 the level was 62, 24, and 14%; and in 2022 the level was 48, 27, and 25% for hand hoe, animal draft, and tractor power respectively. The use of tractors has increased, while the use of hand hoes has decreased, and the use of draft animals has increased insignificantly as shown in Figure 1. Moreover, even in the districts where animal traction or tractors are commonly used, the most mechanized operation is tillage and, to a limited extent, transportation. Other subsequent operations like planting, weeding, harvesting and shelling are mainly done manually.



**Figure 1: Comparison of 4WT, 2WT and DAP use in 2015 and 2023 (Source: MoA 2024)**

The main stakeholders needing Agricultural Mechanization are:

i. Smallholder farmers

Small-scale farmers dominate Tanzanian farming, but most small-scale farmers do not have access to mechanization services. This is due to low purchasing power and the limited availability of appropriate machines in their areas. Also, most small-scale farmers have fragmented farms, which hinders mechanization services. Therefore, there is a need for small-sized machines that can be used in small-sized farms.

ii. Commercial farmers

Based on the field survey conducted by the Ministry of Agriculture, commercial farmers are equipped with agricultural machines used in various farming operations, ranging from land preparation to harvesting (MoA, 2024). These farmers require sophisticated and specialized machinery.

## Chapter One: Introduction...

### iii. Agro processors

According to the field survey results, the agro-processing industry is dominated by small-scale agro-processors who mill mainly for the domestic market. It is reported that 86% of rice processing is carried out by small-scale agro-processors. The same applies to maize milling (95%) and oil mills (92%) (MoA, 2024). They need spare parts and after sales services.

### iv. Rural transporters

According to the field survey results, most tractor-hiring service providers provide hiring services for land preparation and transport services for harvested crops from the fields to storage places. Small-scale farmers in some agroecological zones also depend on animal draught power for crop transportation purposes. Transporters need appropriate transport machines to carry produce from the fields to the storage and processing facilities.

### 1.3 Rationale for TAMS II Strategy

The development of Agricultural Mechanization in Tanzania has been slow, hindered by various factors such as low purchasing power among small-scale farmers, high machinery costs, limited availability of agricultural credit, low availability of trained operators and unsuitable machinery packages. Under the centrally planned economy, Government interventions like tractor hire schemes, affordable credit for farmers, and local manufacturing of tools did help to increase mechanization. However, the approach was not sustainable and had only limited coverage. In 2006, the Ministry of Agriculture developed the Tanzania Agricultural Mechanization strategy, which was implemented under the auspices of ASDP I.

However, according to a field survey carried out by the Ministry of Agriculture (MoA, 2024), it was found that Agricultural Mechanization in Tanzania is still at a relatively low level of adoption. Smallholder farmers often face challenges such as limited access to modern machinery, inadequate infrastructure, limited awareness or training on the benefits of mechanization, low adoption rate of Climate Smart technologies, limited access to financing in agricultural machinery, low coordination among institutions, low technology adoption, and inadequate support to local manufacturers. It has also been revealed that Agricultural Mechanization in the country is yet to take full advantage of the current advanced technologies (Internet of Things (IoT), Unmanned Aerial Vehicle (UAV), agricultural robotics, and Climate Smart Agriculture (CSA) across the mechanization value chain.

To address these challenges, the Ministry of Agriculture reviewed TAMS I and developed the Tanzania Agricultural Mechanization Strategy II (TAMS II) which aims to (i) Improve access and availability of agricultural machinery, technologies and services (ii) Improve manufacturing, commercialization, maintenance of machinery and increasing financing in Agricultural Mechanization (iii) Promote Climate Smart Agriculture technologies and practices (iv) Improve Research and Development, Training and Extension in Agricultural Mechanization (v) Improve policy and legal frameworks.

TAMS II is a roadmap for guiding the mechanization sector's contribution to poverty reduction and economic growth, in alignment with national policies and programmes. TAMS II aims to enhance the role of mechanization in achieving long-term agricultural development while acknowledging that mechanization must be part of a broader strategy that includes institutional improvements, technology adoption, infrastructure development, and smallholder commercialization.

## Chapter One: Introduction...

### 1.4 Methodology

The development of TAMS II began with a comprehensive analysis of Agricultural Mechanization in Tanzania, involving a multidisciplinary team of experts from key institutions such as the Ministry of Agriculture (MoA), the Ministry of Livestock and Fisheries (MLF), President's Office, Regional Administration and Local Government (PO-RALG), Sokoine University of Agriculture (SUA), Tanzania Agricultural Research Institute (TARI), Tanzania Commission for Science and Technology (COSTECH), The Centre for Agricultural Mechanization and Rural Technology (CAMARTEC), Vocational Education Training Authority (VETA) and African Conservation Tillage Network (ACTN). Extensive consultations were held with Government bodies and Public institutions to align the strategy with national policies and programmes. A desk review of TAMS I identified successes, challenges, and recommendations for the new strategy. Data collection involved workshops to design methodologies, creating and testing questionnaires targeting stakeholders across the mechanization value chain, focus group discussions, and field surveys in regions selected based on mechanization levels and priority crops. This inclusive approach ensured stakeholder input which led to the formation of strategic areas.

After the assessment of Agricultural Mechanization, the next step was developing the strategy, which involved the following steps:

#### **Step 1: Consultations with partners at the zone level (assessment of specific needs and validation of strategic areas)**

The stakeholders meeting was held to discuss and validate the strategic areas at Dodoma. The stakeholders involved were experts from the seven Agroecological zones and also included Ministry of Agriculture (MoA), Ministry of Livestock and Fisheries (MLF), President's Office, Regional Administration and Local Government (PO-RALG), Tanzania Agricultural Research Institute (TARI), Tanzania Commission for Science and Technology (COSTECH), Sokoine University of Agriculture (SUA), Vocational Education Training Authority (VETA), The Centre for Agricultural Mechanization and Rural Technology (CAMARTEC), African Conservation Tillage Network (ACTN), Tanzania Cooperative Development Commission (TCDC) and Food and Agriculture Organization of the United Nations (FAO). During the workshop, the stakeholders first reviewed and validated the Assessment of Agricultural Mechanization in Tanzania report. The stakeholders then identified the specific needs of Agricultural Mechanization in the country. In order to address the identified needs, the stakeholders agreed to come up with five strategic areas, namely, Improving access and availability of agricultural machinery, technologies, and services; Improving manufacturing, commercialization, maintenance of machinery, and increasing financing in the Agricultural Mechanization; Promoting Climate Smart Agriculture technologies and practices; Improving research and development, training, and extension; and Policy and legal frameworks.

# Chapter One: Introduction...

---

## **Step 2: Development of the TAMS II draft**

The second step involved the formulation of the TAMS II draft based on the findings from the situational analysis and diagnosis of challenges and opportunities related to Agricultural Mechanization in Tanzania. The draft strategy proposed specific objectives and strategic interventions for each strategic area. The strategy was written in accordance with the guidelines of Gifford, R. C. (1981) and Houmy et al. (2013), as well as other strategies such as NRDS (2019).

## **Step 3: Development of draft Action Plan (Strategic Area Matrices) for the operationalization of TAMS II**

The technical workshop was conducted and proposed the TAMS II action plan. The actors, performance indicators, target, timeline and means of verification were identified for each strategic area. In addition, the budget for implementation of TAMS II for the first five years was proposed.

## **Step 4: Technical workshop to discuss, amend and validate TAMS II**

In this step, various stakeholders from the seven agroecological zones and Private Sectors, including dealers, suppliers, manufacturers, importers, large-scale farmers, financial institutions, and Public Sector institutions came together to discuss, amend, and validate the TAMS II draft report. The draft report was refined to incorporate comments from the stakeholders.

## **1.5 Scope**

TAMS II will be implemented over a ten-year (2025/2026-2035/2036) period focusing on crops and livestock machinery, implements and equipment. The strategy covers the whole value chain from land clearing to crop processing and marketing.

## CHAPTER TWO: SITUATION ANALYSIS OF AGRICULTURAL MECHANIZATION

### 2.1 State of Agricultural Mechanization in Tanzania

According to MoA, 2024, the level of Agricultural Mechanization in Tanzania is low, as majority of farming activities are still done manually. In 2024, the average area cultivated using the hand hoe, draught animal, and tractor power was estimated to be 44, 30, and 26%, respectively. The percentage of the average area cultivated using hand hoe, draught animal, and tractor power in Agro Ecological Zones (AEZ) in Tanzania is shown in Annex 1. The use of tractors is high in the Northern Zone (Arusha, Manyara and Kilimanjaro), while the lowest use of tractors is found in the Western Zone (Kigoma and Tabora). Animal traction is predominantly used in the Central Zone (Dodoma and Singida) and Lake Zone (Mwanza, Kagera, Geita, Simiyu, Shinyanga and Mara). However, where animal traction or tractors are commonly used, the most mechanized operation is tillage and, to a limited extent, transportation. Other subsequent operations like planting and weeding are mainly done manually (MoA, 2024).

The types and number of machinery in use are shown in Table 1 (MoA, 2024). Based on Table 1: Types and number of machinery and implements in use, tractors emerged as the most common power source available amongst farmers. The number of power tillers (2WTs) also stood out as the second most tillage machinery. Despite the success of mechanization in land preparation, the adoption of other agricultural machinery such as harvesters and planters has remained low which currently remain 404 and 887 respectively. With regard to implements, the ploughs have increased proportionally with the number of tractors, given its role in land preparation. The number of harrows seems to be low because farmers in some agro-ecological zones like Lake Zone and Western zone do not do harrowing because of the nature of the soil. According to Ndare (2019) these soils are very deep, moderately well-drained, brown sand loamy topsoil to yellowish sand clay subsoil. Therefore, a single pass plough is enough for seedbed preparation. The number of trailers in the country is also increasing fast. This is due to the fact that the trailers are manufactured locally and sold at affordable price. They are mainly used for transportation services in the urban and rural areas. Concerning Conservation Agriculture (CA), the number of rippers currently stands at 551 only for the whole country, which is very low and therefore there is a need for intervention in order to address this deficiency.

**Table 1: Types and Number of Machinery and Implements in Use**

S/N	Type of machinery and implements	Number of machinery and implements in use
1	Tractor	25,632
2	Power Tiller	15,633
3	Plough	96,414
4	Harrow	9,726
5	Trailer	12,476
6	Combine Harvester	404
7	Planter	887
8	Cultivator	216
9	Ripper	551

Source: MoA, 2024

## Chapter Two: Situation Analysis Of Agricultural Mechanization...

Oxen are the most commonly used draught animals, with about 2 million in use, followed by donkeys, totaling 206,854. Farmers mostly utilize ploughs as implements for draught animals. The majority of farmers use draught animals for pulling ox carts (Table 2).

**Table 2: Number of Draught Animals and Implements in Tanzania**

S/N	Type of draught animals/implements	Number of draught animals/implements
1	Oxen	2,058,787
2	Donkeys	206,854
3	Ploughs	730,433
4	Ox Carts	147,574
5	Harrows	3,431
6	Cultivators	674
7	Rippers	1,267
8	Subsoiler	141

*Source:* MoA, 2024

### 2.2 Constraints of Agricultural Mechanization Stakeholders

Table 3 shows constraints of each stakeholder along the mechanization value chain. The Agricultural Mechanization includes various stakeholders such as farmers, mechanization service providers, agro-processors, machinery importers, distributors, maintenance and repair services, hiring service providers, and manufacturers who are categorized into three groups namely, Mechanization demand, mechanization supply, and institutional support. Each stakeholder faces distinct constraints as shown in Table 3.

## Chapter Two: Situation Analysis Of Agricultural Mechanization...

**Table 3: Agricultural Mechanization Stakeholders and Their Constraints**

S/No	Group Category	Stakeholders	Constraints
1	Mechanization Demand	Farmers	<ul style="list-style-type: none"> <li>i. Low purchasing power</li> <li>ii. Sophistication of the technology</li> <li>iii. Fragmented land</li> <li>iv. Unreliable after sales services</li> <li>v. Limited availability of dealers in most of the rural areas</li> <li>vi. Poor quality of distributed machines</li> </ul>
		Mechanization service providers	<ul style="list-style-type: none"> <li>vii. Unreliable after sales services</li> <li>viii. Limited availability of fuel and lubricants</li> </ul>
		Agro processors	<ul style="list-style-type: none"> <li>ix. Unreliable after sales services</li> </ul>
2	Mechanization supply	Machinery Importers	<ul style="list-style-type: none"> <li>i. Limited access to financing</li> </ul>
		Distributors	<ul style="list-style-type: none"> <li>ii. Limited access to financing</li> </ul>
		Maintenance and repair services	<ul style="list-style-type: none"> <li>iii. Inadequate maintenance and repair services</li> </ul>
		Hiring service providers	<ul style="list-style-type: none"> <li>iv. Insufficient supply and distribution of climate-smart agricultural machinery and implements, limiting their availability through mechanization hire services</li> </ul>
		Fuel and Lubrication	<ul style="list-style-type: none"> <li>v. Poor rural infrastructure</li> </ul>
		Manufacturers	<ul style="list-style-type: none"> <li>vi. Poor commercialization of the locally manufactured agricultural machinery</li> <li>vii. The high cost of raw materials</li> <li>viii. Limited access to financing</li> <li>ix. Competition between local and imported machines</li> </ul>
3	Institutional Support	Training, Research and Development	<ul style="list-style-type: none"> <li>i. Limited coordination between institutions</li> <li>ii. Limited trained operators and technicians</li> <li>iii. Limited financing for training, research and development</li> <li>iv. The high cost of raw materials</li> </ul>
		Policy Environment	<ul style="list-style-type: none"> <li>v. Limited budgetary allocations</li> <li>vi. Limited coordination between institutions</li> </ul>

### 2.3 Achievements and Challenges of TAMS I

There were some achievements and challenges during the implementation of TAMS I.

#### 2.3.1 Achievements of TAMS I

The following are the achievements of TAMS I:

- (i) Increase in number of tractors in use (e.g. 4WTs from 7,800 in 2005 to 22,849 in 2023, 2WTs from 300 in 2005 to 11,379 in 2023).
- (ii) Increase of importation and supply of agricultural machinery (tractors, power tillers, and combine harvesters) and implements (disc ploughs, seeders and planters, disc harrows, ox drawn harrow,

## Chapter Two: Situation Analysis Of Agricultural Mechanization...

and ox drawn plough). Example, the number of tractors, power tillers and combine harvesters that were imported in 2015 were 939, 354, and 28, respectively, while in 2023 were 2484, 4125, and 114, respectively.

- (iii) Increase in level of mechanization in ploughing from 24 percent and 14 percent for DAP and tractor respectively in 2015 to 30 percent and 26 percent respectively in 2023. There was also a decrease of human power from 62% to 44%.
- (iv) Farmers accessed funds from Agricultural Inputs Trust Fund (AGITF), Tanzania Agriculture Development Bank (TADB) and Tanzania Investment Bank (TIB) to purchase about 1,626 tractors and 400 power tillers under subsidized interest rate (5-12%).
- (v) Rapid increase in the importation of power tillers during 2009 and 2010, immediately after the Government's initiative to enhance smallholder agriculture under Kilimo Kwanza. During this time 2,647 power tillers were imported through the Government initiatives.

### 2.3.2 Challenges of TAMS I

There were several challenges during the implementation of TAMS I as shown in Table 4.

**Table 4: Challenges of TAMS I**

S/N	Strategic action area	Specific objectives	Challenges
1	Improve Access and Availability to Mechanization Inputs	i) Stimulate demand for agricultural machinery through promotions.	<ul style="list-style-type: none"> <li>• Low accessibility and adoption rate of mechanization inputs, especially for harvesting, hence high postharvest losses.</li> </ul>
		ii) Attract local and foreign investors to engage in production, importation and supply of agricultural machinery, respectively	<ul style="list-style-type: none"> <li>• Unequal distribution of mechanization services in the community</li> </ul>
		iii) Facilitate dealers, suppliers, manufacturers and farmers to access financial resources for the supply, manufacture and purchase of agricultural machinery	<ul style="list-style-type: none"> <li>• Low purchasing power of mechanization inputs.</li> <li>• Inadequate accessibility to financial services for mechanization inputs (stiff bank loan conditions)</li> </ul>
		iv) Improve local manufacturing of agricultural machinery through establishment of technology incubator programmes and commercialization of inventions and innovations from R&D.	<ul style="list-style-type: none"> <li>• Local manufacturers faced competition with Government institutions</li> </ul>
		v) Strengthen the capacity of various informal Private Sector (jua kali) players (e.g. blacksmiths, artisans, garages and cottage manufacturers) in carrying out production of specialized tools and equipment.	<ul style="list-style-type: none"> <li>• The Private Sector players faced difficulties in selling their products due to low-cost machines imported from abroad.</li> </ul>

## Chapter Two: Situation Analysis Of Agricultural Mechanization...

S/N	Strategic action area	Specific objectives	Challenges
2	Commercialization of Agriculture through Mechanized Farming	i) Enhance entrepreneurial and commercial approaches to mechanized farming.	<ul style="list-style-type: none"> <li>The small budget is allocated to the Public-supported financial institutions.</li> <li>Collateral requirements were high, and farmers could not meet e.g. the lack of title deeds for most farmers.</li> </ul>
		ii) Facilitate Private Sector enterprises to operate machinery hire services to increase and expand farmers' access to and utilization level of agricultural machinery.	<ul style="list-style-type: none"> <li>Budget deficit to support training.</li> </ul>
		iii) Promote multi-use of agricultural machinery in various farm activities and commodity-specific agricultural machinery e.g., cashew nut tree sprayers, harvesters and rice production machinery.	<ul style="list-style-type: none"> <li>Limited coverage, primarily conducted in irrigation schemes and specialized crops only.</li> </ul>
3	Promoting the development of post-harvest handling, Processing, storage, marketing and rural-based agro industries	i) Promote agro-processing and value-addition technologies that contribute to the rural population's sustainable livelihoods and facilitate the country's emerging small commercial farmers.	<ul style="list-style-type: none"> <li>Drying technologies were not well implemented.</li> </ul>
		ii) Strengthen the capacity of post-harvest and rural-based agro-industries	<ul style="list-style-type: none"> <li>Limited funds for the post-harvest and rural based agro-industries.</li> </ul>
		iii) Enhance access to and use of improved post-harvest, rural travel and transport, processing, storage and marketing technologies.	<ul style="list-style-type: none"> <li>Limited funds for promotion.</li> </ul>
		iv) Facilitate Private Sector investment in medium-scale processing of agricultural commodities	<ul style="list-style-type: none"> <li>Inadequate funds to support Private Sector investment.</li> </ul>

## Chapter Two: Situation Analysis Of Agricultural Mechanization...

S/N	Strategic action area	Specific objectives	Challenges
4	Improving Livelihoods and Land Management through Conservation Agriculture	i) Increase awareness of Conservation Agriculture practices and demand for the technology among stakeholders	<ul style="list-style-type: none"> <li>Limited support to the Private Sector in the promotion of CA technologies.</li> </ul>
		ii) Build the capacity of farmers, extension staff and Local Government officials in CA technologies	<ul style="list-style-type: none"> <li>Lack of continuity of funding after the end of donor funds.</li> </ul>
		iii) Build capacity of manufacturers and distributors for supply of CA inputs (seeds, tools, implements, machines)	<ul style="list-style-type: none"> <li>Limited capacity to reach many stakeholders.</li> </ul>
		iv) Enhance information dissemination on CA technologies (including profitability, environment and social economic aspects)	<ul style="list-style-type: none"> <li>Limited funds for CA projects.</li> </ul>
		v) Institute policies and laws governing cultivation practices that protect and conserve marginal lands and water sheds	<ul style="list-style-type: none"> <li>Lack of enforcement of bylaws.</li> </ul>
5	Improving farmers' access to technologies and services	i) Raise Public awareness of improved or new Agricultural Mechanization technologies	<ul style="list-style-type: none"> <li>Investment initiatives focused mainly on the acquisition of mechanical power, especially 2WTs, 4WTs, harvesting and postharvest processing equipment.</li> </ul>
		ii) Enhance uptake and up-scaling of mechanization technologies among users	<ul style="list-style-type: none"> <li>Limited investment capital of Public-supported financiers.</li> </ul>
		iii) Enhance information dissemination and exchange on local and international technological developments in Agricultural Mechanization	<ul style="list-style-type: none"> <li>Low linkage between the local research institutions and international research centers.</li> </ul>
		iv) Devise and promote the use of responsive, efficient and cost-effective approaches in delivery of research and extension services	<ul style="list-style-type: none"> <li>Limited funds for conducting FFBS and on-farm trials.</li> </ul>
		v) Improve skills and knowledge base for actors in Agricultural Mechanization	<ul style="list-style-type: none"> <li>Inadequate human resources to train farmers on special implements like rippers.</li> </ul>
6	Improving financial of Agricultural Mechanization	i) Increase financing for Agricultural Mechanization	<ul style="list-style-type: none"> <li>Limited funds available in financial institutions for financing Agricultural Mechanization</li> </ul>
		ii) Improve access to loans for purchase of mechanization input	<ul style="list-style-type: none"> <li>Lack of collateral for small scale farmers.</li> </ul>

## Chapter Two: Situation Analysis Of Agricultural Mechanization...

S/N	Strategic action area	Specific objectives	Challenges
7	Improving policy, legal and regulatory environment for Agricultural Mechanization	i) Review and harmonize policies, Acts, and Regulations to attract investments in Agricultural Mechanization	<ul style="list-style-type: none"> <li>TAMS I was not reviewed on time.</li> <li>No Agricultural Mechanization Act.</li> </ul>
		ii) Ensure quality control	<ul style="list-style-type: none"> <li>Limited technical and financial resources.</li> </ul>
8	Cross-cutting and cross-sectional issues - HIV/AIDS gender and energy	i) Contribute in effort to mitigate effect of HIV/AIDS through adoption of labor, saving technologies	<ul style="list-style-type: none"> <li>Limited resources in upscaling labor saving technologies</li> </ul>
		ii) Mainstream gender in Agricultural Mechanization interventions	<ul style="list-style-type: none"> <li>Lack of awareness among the implementers of gender issues.</li> <li>Lack of awareness among women on their role in Agricultural Mechanization.</li> </ul>

### 2.4 The Current Orientation of the Government on Agricultural Mechanization

The Government has clearly shown its commitment to advance Agricultural Mechanization through the implementation of various policies and programmes. Among the policies and programmes that support this commitment are: Tanzania Development Vision 2050 (DIRA 2050), National Agriculture Policy 2013 (NAP), Public Private Partnership (PPP) 2009, Long Term Perspective Plan implemented by the National Five-Year Development Plans (FYDP), Tanzania Agriculture Master Plan 2050 (AMP), Agriculture Sector Development Programme II (ASDP II), the Agenda 10/30 Investment Roadmap for accelerating Agricultural Growth in Tanzania, Building a Better Tomorrow (BBT), the National Rice Development Strategy (NRDS) 2019-2030, Integrated Industrial Development Strategy 2025 and Tax Incentive on Agricultural Mechanization. Other initiatives outside the Government include the Framework for Sustainable Agricultural Mechanization for Africa (F-SAMA), the Kampala Declaration (2026 - 2035), the Agenda 2063- the Africa We Want, and the Sustainable Development Goals (SDGs) (ADB, 2023, and MoA, 2024). These documents are briefly described in the following sections.

#### 2.4.1. Tanzania Development Vision 2050

TAMS II lies in line with the Tanzania Development Vision 2050 targets which aim for Tanzania to become the leading food producer in Africa. To attain the specified target, the use of modern farm machinery through investment in Agricultural Mechanization is imperative.

#### 2.4.2. National Agriculture Policy 2013

TAMS II aligns with the National Agriculture Policy 2013, which aims to promote efficient utilization of farm machinery, implements, equipment and agro-processing machines. The policy include the following statements which are to: Improve conducive environment for Private Sector participation in Agricultural Mechanization; promote efficient utilization of agricultural machinery, implements, equipment and tools, particularly among women and men farmers; Promote utilization of agro-mechanization packages and mechanical technologies to local conditions; Regulate and enforce quality standards of agricultural machinery, implements, equipment and tools; Strengthen collaboration with Private Sector, provision of

## Chapter Two: Situation Analysis Of Agricultural Mechanization...

training programmes for different levels on farm machinery, processing machines facilities and after-sale services.

### 2.4.3. Public-Private Partnership 2009

TAMS II is in line with the Government's effort to collaborate with the Private Sector in creating various opportunities that accelerate the development of Agricultural Mechanization in Tanzania. This is done through the Public-Private Partnership Policy of 2009 (URT, 2009), which aims to mainstream the sector's role in socioeconomic development. TAMS II encourages Private Sector involvement in mechanization investment through PPP.

### 2.4.4. Long Term Perspective Plan

TAMS II is aligned with the Long-Term Perspective Plan (LTPP) implemented by the National Five-Year Development Plans (FYDPs) which aims at building an economy that is inclusive, competitive and integrated, underpinned by industrialization and services driven by modern science, technology, and innovation (STI). The agricultural sector will be transformed and commercialized consistent with considerations of Climate Smart Agriculture (CSA). Farmers will be incentivized to invest sustainably to increase productivity and incomes, adapt and build resilience to climate change.

### 2.4.5. Tanzania Agriculture Master Plan 2050

TAMS II lies in line with the Government of Tanzania Agriculture Master Plan (AMP), which guides the sector through a full transformation, serving as the backbone of a broader economic transformation by 2050. TAMS II aims to support the Government in reducing manual cultivation to 10 percent by 2030. The Government has undertaken certain efforts to promote mechanization in the country, including establishing mechanization centres, providing tax exemptions for importing farm machinery, and Public financial institutions.

### 2.4.6. Agriculture Sector Development Programme II

TAMS II is aligned with ASDP II, which aims at transforming the agricultural sector (crops, livestock & fisheries) towards higher productivity, commercialization level and smallholder farmer income for improved livelihood, food and nutrition security and contribution to the GDP.

### 2.4.7. Agenda 10/30 Investment Roadmap for Accelerating Agricultural Growth in Tanzania

TAMS II is tandem with the country's commitment to the Agenda 10/30 Investment Roadmap for Accelerating Agricultural Growth in Tanzania. The thrust is to turn agriculture into business in response to the sector's underperformance. Moreover, the roadmap shows the strategic Government investments needed to accelerate the ASDP II targets on the crop subsector that will see the growth rate of the subsector's GDP at 10 percent by 2030. It emphasizes the adoption of modern inputs, including mechanization, to enhance productivity for each of the mentioned strategic crops.

### 2.4.8. Building a Better Tomorrow (2022- 2030)

TAMS II aligns with Building a Better Tomorrow, a Youth and Women Initiative for Agribusiness (BBT-YIA). This initiative aims to enhance the engagement of youths in the agricultural sector. Furthermore, it is a tool for contributing to the attainment of Agenda 10/30, which envisages increasing youth employment by

## Chapter Two: Situation Analysis Of Agricultural Mechanization...

1.5 million and achieving a growth rate of the agricultural sector of ten (10) percent by 2030. Moreover, it facilitates youths' access to land and emphasizes the block farming system by using modern agricultural machinery.

### **2.4.9. National Rice Development Strategy 2019-2030**

TAMS II lies in line with the targets of the National Rice Development Strategy (NRDS) Phase II, which is to double the area under rice cultivation from 1.1 million ha to 2.2 million ha and double on-farm rice productivity from 2 tons/ha to 4 tons/ha by 2030. The Private Sector is encouraged to promote the utilization of farm mechanization (tractors, planters, combine harvesters, and rotary weeders) to facilitate timely rice farming operations and increase investments in affordable post-harvest technologies and value addition. Research and extension services will be strengthened and capacity building on good agricultural practices and postharvest handling will be enhanced to reduce post-harvest losses.

### **2.4.10. Integrated Industrial Development Strategy 2025**

The Integrated Industrial Development Strategy 2025 recommends establishing an Agricultural Mechanization strategy and equipment hiring centers at core locations in Tanzania. It emphasizes the strong incentives to be provided to agricultural equipment manufacturing investors.

### **2.4.11. Tax Incentive on Agricultural Mechanization**

The tax exemption on Agricultural Mechanization is outlined in the Value Added Tax Act Cap 148. The zero-rate added tax applies to agricultural machinery. The exempted supplies and imports include tractors for agricultural use, agricultural, horticultural, or forestry machinery for soil preparation or cultivation, excluding lawn mowers or sports ground rollers and parts; harvesting or threshing machinery, except machines under HS Code 8433.11.00 and 8433.19.00; liquid and powder sprayers for agriculture; spades, shovels, mattocks, picks, hoes, forks, rakes, axes; tractor trailers; new pneumatic tires used in agricultural and forest vehicles; rotavators; poultry incubators; irrigation equipment and parts; greenhouse systems; semen for bovine and non-bovine animals; and dam liners.

### **2.4.12. Other Related Initiatives**

#### **2.4.12.1. Sustainable Agricultural Mechanization: A Framework for Africa**

TAMS II has incorporated the 10 priority elements of the Sustainable Agricultural Mechanization: A Framework for Africa (F-SAMA). The report presents a framework for sustainable Agricultural Mechanization strategies in Africa, with a menu of priority elements for countries to consider in developing their strategies for sustainable Agricultural Mechanization (SAM).

#### **2.4.12.2. Kampala Declaration (2026 - 2035)**

TAMS II emphasizes access to mechanization services as stated in the Kampala Declaration, which urges Governments in Africa to create and enhance the necessary, appropriate policy and institutional conditions and support systems to facilitate sustainable and reliable production, access to quality and affordable inputs, and reliable and affordable mechanization and energy supplies.

## Chapter Two: Situation Analysis Of Agricultural Mechanization...

A significant shift in the new Kampala Comprehensive Africa Agriculture Development Programme (CAADP) Strategy and Action Plan (2026-2035), is the move from a narrow focus on agriculture-led growth to a broader agrifood systems approach. This strategic shift is informed by an understanding of the complex interplay between agriculture, nutrition, economic development, and other sectors. Policies must be better integrated to address trade-offs and interlinkages across aspects of sustainable practices from farm to fork, value chain complexity, diets and nutrition, among other food factors. The Declaration also emphasizes the need to strengthen agricultural input systems, including improved the use of agricultural technologies to boost productivity.

### 2.4.12.3. Agenda 2063: “The Africa We Want”

TAMS II is aligned with Africa’s blueprint and master plan for transforming Africa into a prosperous continent with structured transformed economies that create shared growth, decent jobs and economic opportunities for all, including the youth and women. Agenda 2063 envisages that Africa’s agriculture will be modern and productive, using science, technology, innovation and indigenous knowledge. The sector will be modern, profitable and attractive to the continent’s youth and women.

### 2.4.12.4. Sustainable Development Goals

TAMS II also aligns with the Sustainable Development Goals (SDGs): SDG 1: No Poverty, SDG 2: Zero Hunger, SDG 5: Gender Equality, SDG 8: Decent Work and Economic Growth, SDG 9: Industry, Innovation, and Infrastructure, and SDG 13: Climate Action.

## 2.5 Key Agricultural Mechanization Issues

This section highlights key issues in Agricultural Mechanization in Tanzania, which are summarized from the Strengths, Weaknesses, Opportunities, and Challenges (SWOC) analysis based on three main mechanization stakeholders’ categories: Agricultural Mechanization demand, Agricultural Mechanization supply chain, and institutional environment. The SWOC analysis for all categories is presented in Annex 2. Based on the assessment of the current situation of Agricultural Mechanization in Tanzania, the following issues were observed and will be addressed in TAMS II.

- i. Environmental issues such as climate change were not addressed in TAMS I;
- ii. Insufficiency of farm machinery hiring services;
- iii. Low purchasing power of mechanization inputs by smallholder farmers;
- iv. Limited financing for agricultural machinery;
- v. High cost of raw materials leading to high production cost for local manufacturers;
- vi. Limited training on local craftsmen in manufacturing technology, machine operation, and repair and maintenance;
- vii. Inadequate research on agricultural machinery;
- viii. Poor linkage between institutions dealing with Agricultural Mechanization; and
- ix. Low adoption of Climate Smart techniques in Agricultural Mechanization.

## CHAPTER THREE: STRATEGIC AREAS AND INTERVENTIONS

### 3.1 Vision and Mission

#### 3.1.1 Vision

The vision of TAMS II is to revolutionize agriculture by integrating advanced machinery and technology to drive sustainable agricultural agri-food systems and improve livelihoods.

#### 3.1.2 Mission

The mission is to create an enabling environment for scaling up appropriate Agricultural Mechanization to increase production, productivity, efficiency, and climate resilience; enhance food security, promote commercialization, and contribute to economic development and GDP growth.

#### 3.1.3 Overall Objective

TAMS II aims to enhance Mechanization's role in achieving Long-term Agricultural Development, while acknowledging that Mechanization must be part of a Broader Strategy that includes Institutional Improvements, Technology Adoption, Infrastructure Development, and Smallholder Commercialization.

To attain the mission, the following strategic areas are set;

### 3.2 Strategic Areas

The strategic areas attempt to address some of the constraints found in accessing Agricultural Mechanization, aiming to enable mechanization to contribute more effectively to increasing agricultural production and productivity. Thus, the Tanzania Agricultural Mechanization Strategy II is guided by the policies and programmes orientations formulated at the national, regional, and international levels. These include policies and programmes such as the National Agriculture Policy 2013, Tanzania Agriculture Master Plan 2050, ASDP II, DIRA 2050, Agenda 10/30, the Kampala Declaration (2026 - 2035), Agenda 2063 (The Africa We Want), F-SAMA, and SDGs. The strategic areas of the mechanization strategy fall under the four components of ASDP II and 15 flagships of the Tanzania Agriculture Master Plan 2050 namely:

**Component 1:** Sustainable Water and Land Use Management - encompasses activities that will be undertaken in the field to directly support agricultural production by promoting Climate Smart Agriculture (CSA) technologies and practices (Flagship 1, 3, 6, 14).

**Component 2:** Enhanced Agricultural Productivity and Profitability - aims to strengthen and promote Agricultural Mechanization (crop, livestock, and fisheries) (Flagship 2, 3, 4, 5, 12, 15).

**Component 3:** Commercialization and Value Addition - includes the development of processing and value addition for crops, livestock, and fisheries products (Flagship 4, 9, 10).

**Component 4:** Sector Enablers, Coordination and Monitoring and Evaluation - includes strengthening the organizational and technical capacities of existing and new small-scale producers, trade and processing farmer organizations, and cooperative movements. This involves all cross-cutting and cross-sectoral issues,

## Chapter Three: Strategic Areas and Interventions...

such as those aimed at linking with units in other Ministries, such as SIDO, regarding agro-processing and PO-LARG concerning rural roads and Gender issues (Flagship 2, 4, 7, 11, 12, 13, 14).

Annex 3 details the Mechanization Strategy Framework Matrix, including the strategic areas (SA), specific objectives (SO), strategic interventions (SI), actors, timeframe, outputs, and verifiable indicators. The proposed activities or interventions in TAMS II will be implemented under the components spelled out in the AMP 2050 and ASDP II frameworks.

The strategy is presented in five strategic areas, under which a set of interventions needs to be implemented to achieve the specific objectives that have been proposed. The five strategic areas are;

**SA. 1:** Availability and accessibility of agricultural machinery and technologies

**SA. 2:** Manufacturing, Commercialization and Financing

**SA. 3:** Climate Smart Agriculture

**SA. 4:** Research and Development, Training and Extension

**SA. 5:** Policy and Legal Frameworks

The relationship between Agricultural Mechanization issues and strategic areas is shown in Figure 2.

## Chapter Three: Strategic Areas and Interventions...

The Agricultural Mechanization issues are mapped with the strategic areas to ensure that all issues which were identified during the assessment of the current status of Agricultural Mechanization are addressed.

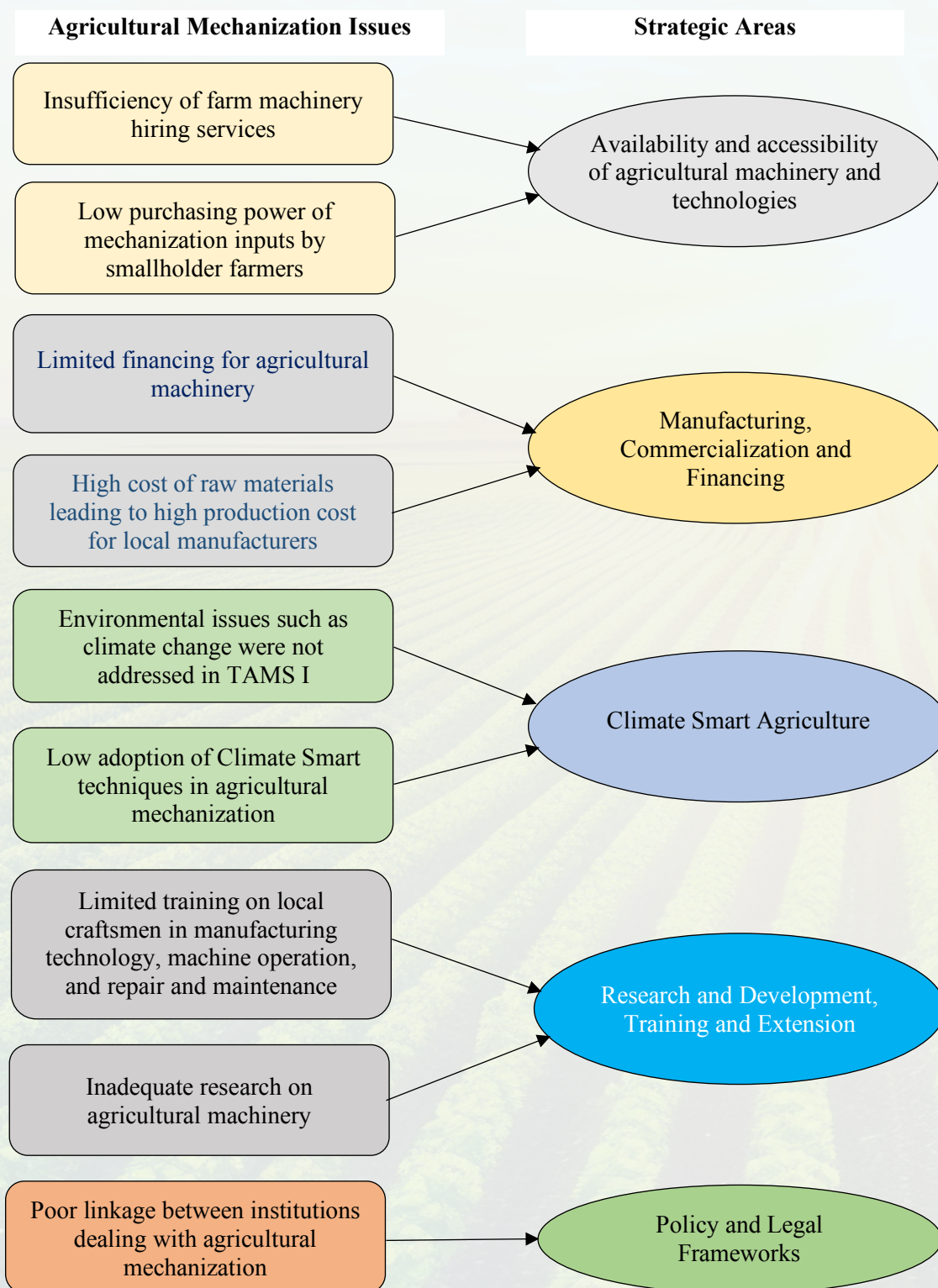


Figure 2: Relationship Between Agricultural Mechanization Issues and Strategic Areas

## Chapter Three: Strategic Areas and Interventions...

Strategic areas are further elaborated below and include specific objectives and interventions.

### **SA. 1: AVAILABILITY AND ACCESSIBILITY OF AGRICULTURAL MACHINERY AND TECHNOLOGIES.**

**Strategic objective 1:** Improve availability and accessibility of agricultural machinery, technologies and services

#### **Rationale**

There is a vast gap in Agricultural Mechanization in different agroecological zones of the country due to limited accessibility of agricultural machinery. The most affected group is the smallholder farmers who face limited accessibility of agricultural machinery and implement which eventually leads to decreased overall efficiency of agricultural production operations, productivity and incomes. Increased access to machinery by smallholder farmers is now considered as a global agenda in an effort to improve food security and livelihoods (Sims & Kienzle, 2016).

TAMS II envisage promotion of both locally manufactured and imported agricultural machinery and equipment in order to increase availability and accessibility to farmers in the rural areas. The local manufacturers will be capacitated in order to enable them to fabricate the machines that suit the local conditions and are appropriate for the farm sizes common to smallholder farmers. Global integration will also be practiced so as to increase access to mechanization tools through adaptation. These initiatives will enable farmers to manage large land areas efficiently. TAMS II will also facilitate and create awareness on the impact of Agricultural Mechanization on agricultural productivity, drudgery reduction and sustainability.

#### **Specific objectives**

The specific objectives are to:

- SO. 1.1: Stimulate demand for agricultural machinery through promotions;
- SO. 1.2: Enhance Public and Private Sectors engagement in delivering mechanization services; and
- SO. 1.3: Strengthen the capacity of various actors along the Agricultural Mechanization value chain.

#### **SO. 1.1: Stimulate demand for agricultural machinery through promotions.**

The strategic interventions are to:

- SI. 1.1.1: Publicize on the benefits of using agricultural machinery in farming activities;
- SI. 1.1.2: Sensitize and Publicize on the use of selected or adapted technologies, whether locally manufactured or imported;
- SI. 1.1.3: Perform Publicity on access to mechanization information through the use of Information and Communication Technologies (ICTs);
- SI. 1.1.4: Perform Publicity to attract the adoption of new emerging technologies such as Internet of Things (IoT) technology apps, Drone applications in Agriculture, Tracking systems, and Agricultural robotics for strategic crops; and

## Chapter Three: Strategic Areas and Interventions...

SI. 1.1.5: Enhance easy access to mechanization inputs through adapted targeted subsidies and extension services.

### **SO. 1.2: Enhance Public and Private Sectors engagement in delivering mechanization services.**

The strategic interventions are to:

SI. 1.2.1: Strengthen and establish new Agricultural Mechanization Centres;

SI. 1.2.2: Facilitate inter region mechanization services within the country and cross border;

SI. 1.2.3: Facilitate establishment and growth of primary and secondary Agromechanization industries; and

SI. 1.2.4: Support and link farmers, cooperative societies, farmers groups and local agriculture machinery manufacturers with financial institutions and other development partners for improving access to appropriate mechanization.

### **SO. 1.3: Strengthen the capacity of various actors along the Agricultural Mechanization value chain.**

The strategic interventions are to:

SI. 1.3.1: Enhance supportive infrastructures for Agricultural Mechanization (e.g., investment in rural infrastructure);

SI. 1.3.2: Facilitate and support agricultural machinery service providers to participate in Agricultural Mechanization platforms at all levels; and

SI. 1.3.3: Facilitate tailor-made and short-course training to various sector players.

## **SA. 2: MANUFACTURING, COMMERCIALIZATION AND FINANCING**

**Strategic objective 2:** Improve manufacturing, commercialization, maintenance of machinery and increasing financing in Agricultural Mechanization.

### **Rationale**

The manufacturing industry faces a number of challenges, including technological limitations, inadequate maintenance skills, limited access to finance, and insufficient maintenance management systems. This situation results in the fabrication of only a few components of the machines and the importation of others from outside the country, such as movers (motors and engines). Additionally, it causes external dependence, high operational costs, and most of the farm operations in the country to be performed manually, leading to a small production area.

TAMS II aims to improve local manufacturing industries of agricultural machinery, commercialization of products, machinery maintenance and increase financing mechanisms along the Agricultural Mechanization value chain.

## Chapter Three: Strategic Areas and Interventions...

### Specific Objectives

The specific objectives are to:

- SO. 2.1: Improve local manufacturing of agricultural machinery and equipment through innovation, technology transfer and commercialization;
- SO. 2.2: Strengthen maintenance services and after-sales support to the agro-machinery dealers and local mechanics in the seven agroecological zones; and
- SO. 2.3: Increase financing and investment in mechanization.

#### **SO. 2.1: Improve local manufacturing of agricultural machinery and equipment through innovation, technology transfer and commercialization.**

The strategic interventions are to:

- SI. 2.1.1: Promote the manufacturing of agricultural machinery and equipment along agricultural value chain;
- SI. 2.1.2: Improve the quality and durability of locally manufactured agricultural machinery to comply with the specified standards;
- SI. 2.1.3: Encourage Public Private Partnership (PPP) to boost agricultural machinery distribution and sales network across the country;
- SI. 2.1.4: Facilitate technology transfer and innovation by establishing a partnership between local and international manufacturers/research institutions;
- SI. 2.1.5: Capacitate the local manufacturers with technical and business management skills; and
- SI. 2.1.6: Promote local manufacturing of spare parts for commonly used agricultural machinery and implements.

#### **SO. 2.2: Strengthen maintenance services and after-sales support to the agro-machinery dealers and local mechanics in the seven agroecological zones.**

The strategic interventions are to:

- SI. 2.2.1: Improve a network of certified maintenance centres to provide reliable repair and maintenance services of agricultural machinery and equipment;
- SI. 2.2.2: Provide on job training on operation and maintenance skills; and
- SI. 2.2.3: Capacitate local workshops with advanced maintenance technology.

#### **SO. 2.3: Increase financing and investment in Agricultural Mechanization.**

The strategic interventions are to:

- SI. 2.3.1: Facilitate farmers enterprises and organizations to acquire credits and loans along the Agricultural Mechanization value chain;

## Chapter Three: Strategic Areas and Interventions...

- SI. 2.3.2: Strengthen engagement of Public Private Partnership (PPP) investment in Agricultural Mechanization value chain;
- SI. 2.3.3: Empower small-scale farmers, women and youths in Agricultural Mechanization through the provision of credits, loans and leases; and
- SI. 2.3.4: Provide an enabling environment to the Public and Private Sectors to introduce agro processing and value addition industries.

### SA 3: CLIMATE SMART AGRICULTURE

**Strategic objective 3:** Promote Climate Smart Agriculture technologies and practices

#### Rationale

In recent years, many African countries have been facing the impacts of climate change. Sustainable Agricultural Mechanization is regarded as one of the modern ways of addressing the impacts of climate change. Climate Smart Agriculture technologies and practices present opportunities for addressing these climate change challenges through adaptation and mitigation roles. However, the adoption of CSA in Tanzania, like elsewhere in Africa, is still low. Among the challenges of CSA adoption observed include: limited awareness and knowledge of CSA and related practices among various actors; limited accessibility and high prices of appropriate CA mechanical equipment and implements; limited coordination of stakeholders and information sharing along the CA value chain; limited financial and human resources for R&D; and dissemination of CA.

TAMS II aims to raise awareness of CSA technologies, conduct capacity-building activities at all levels along the value chain, and strengthen linkages among various actors to ensure better service quality in their respective specialty areas.

#### Specific Objectives

The specific objectives are to:

- SO. 3.1: Increase the use of CSA technologies that contribute to the rural population's sustainable livelihoods;
- SO. 3.2: Strengthen capacity of CSA extension/advisory workers; and
- SO. 3.3: Create the enabling environment for scaling adoption of CSA technologies and practices.

#### **SO. 3.1: Increase the use of CSA technologies that contribute to the rural population's sustainable livelihoods.**

The strategic interventions are to:

- SI. 3.1.1: Conduct CSA awareness campaigns using media and stakeholder forums;
- SI. 3.1.2: Organize workshops and field demonstrations on CSA technologies; and
- SI. 3.1.3: Leverage community-based initiatives and cooperatives to spread CSA technologies.

## Chapter Three: Strategic Areas and Interventions...

### **SO. 3.2: Strengthen capacity of CSA extension/advisory workers.**

The strategic interventions are to:

- SI. 3.2.1: Update and coordinate on training curriculum for short and long-term courses on CSA;
- SI. 3.2.2: Conduct specialized training sessions to enhance knowledge on CSA technologies for extension workers and service providers; and
- SI. 3.2.3: Training and certification of CA mechanization service providers.

### **SO. 3.3: Create the enabling environment for scaling adoption of CSA technologies and practices.**

The strategic interventions are to:

- SI. 3.3.1: Disseminate and implement soil conservation policies and guidelines at all levels (local authorities to national level);
- SI. 3.3.2: Pilot and scale appropriate climate smart agricultural practices; and
- SI. 3.3.3: Provide incentives for scaling CSA technologies including targeted subsidies on CA machinery.

## **SA 4: RESEARCH AND DEVELOPMENT, TRAINING AND EXTENSION**

**Strategic objective 4:** Improve Research and Development, Training and Extension in Agricultural Mechanization

### **Rationale**

Research and Development are key to improving Agricultural Mechanization in the country since they contribute to improved production and productivity. The major challenges in Research and Development include low financing, inadequate linkage between research institutions and extension services, insufficient research personnel, and limited development of excellence in research capacities.

Training and extension services are crucial in transferring Agricultural Mechanization knowledge and technology to farmers; however, they are faced with various challenges, including inadequate technical personnel, low Private Sector participation in providing extension services, insufficient knowledge regarding technological advancement, and weak coordination of agricultural extension services.

TAMS II aims to improve Research and Development, Training and Extension Services, to promote efficient utilization of appropriate farm machinery, implements, power and energy along the Agricultural Mechanization value chain.

### **Specific Objectives**

The specific objectives are to:

- SO. 4.1: Strengthen Research and Development (R&D) in Agricultural Mechanization;
- SO. 4.2: Strengthen training in Agricultural Mechanization; and
- SO. 4.3: Strengthen Agricultural Mechanization extension services.

## Chapter Three: Strategic Areas and Interventions...

### **SO. 4.1: Strengthen Research and Development (R&D) in Agricultural Mechanization.**

The strategic interventions are to:

- SI. 4.1.1: Increase financial resources investment to support research activities related to Agricultural Mechanization;
- SI. 4.1.2: Conduct research on Agricultural Mechanization technologies appropriate to local farming conditions along the value chain;
- SI. 4.1.3: Promote collaboration among research institutions, academic institutions and Private Sector to accelerate innovation and technology transfer;
- SI. 4.1.4: Enhance availability and sustainability of human resource in research institutions;
- SI. 4.1.5: Strengthen collaboration in selection, development and testing processes of agricultural machinery to ensure safety, performance, and suitability to local conditions; and
- SI. 4.1.6: Strengthen linkage among research institutions, extension agencies, and farmers on dissemination of Agricultural Mechanization research findings.

### **SO. 4.2: Strengthen training in Agricultural Mechanization .**

The strategic interventions are to:

- SI. 4.2.1: Enhance training programs for Agricultural Mechanization at all levels of education;
- SI. 4.2.2: Increase and capacitate training centres on Agricultural Mechanization to offer hands-on training and certification programs for engineers, technicians, operators and artisans;
- SI. 4.2.3: Strengthen collaboration between the Public and Private Sector to provide Agricultural Mechanization training to farmers, technicians, artisans and service providers;
- SI. 4.2.4: Promote the continuous professional development of trainers and educators in Agricultural Mechanization related fields to ensure they stay updated with the latest technologies; and
- SI. 4.2.5: Sensitize and build capacity to small and medium-scale agro processors.

### **SO. 4.3: Strengthen Agricultural Mechanization extension services.**

The strategic interventions are to:

- SI. 4.3.1: Enhance capacity building to Subject Matter Specialists (SMS) in Agricultural Mechanization and extension officers to deliver knowledge and technical support to farmers;
- SI. 4.3.2: Facilitate Farmer Field Business Schools (FFBS) and demonstration plots to showcase the use of various agricultural machinery in different farming operations; and
- SI. 4.3.3: Strengthen Public-private partnerships to support mechanization extension services.

## Chapter Three: Strategic Areas and Interventions...

### SA 5: POLICY AND LEGAL FRAMEWORKS

**Strategic objective 5:** Improve policy and legal frameworks

#### Rationale

Improving the policy and legal frameworks for Agricultural Mechanization is crucial for transforming the agricultural sector. The major challenges of policy and legal frameworks are: low coordination between institutions; low implementation of policy and legal frameworks among farmers and farmer organizations; lack of feedback mechanism; and lack of after sales service arrangements.

TAMS II aims to provide clear direction through a common planning system, legal compliance, certification and feedback mechanisms, monitoring, evaluation and learning, and institutional and regulatory frameworks. As a result, TAMS II will enhance institutional coordination and alignment and define roles across stakeholders.

#### Specific Objectives

The specific objectives are to:

- SO. 5.1: Harmonize policies, acts, regulations and plans to attract investments in Agricultural Mechanization;
- SO. 5.2: Strengthen legal compliance among stakeholders; and
- SO. 5.3: Support monitoring, evaluation and learning on Agricultural Mechanization.

#### **SO. 5.1: Harmonize policies, acts, regulations and plans to attract investments in Agricultural Mechanization.**

The strategic interventions are to;

- SI. 5.1.1: Provide subsidies to farmers youth, women and men for Agricultural Mechanization services;
- SI. 5.1.2: Strengthen policies, regulations, and plans that support Agricultural Mechanization, including tax exemptions; and
- SI. 5.1.3: Develop a roadmap for attracting investments in Agricultural Mechanization.

#### **SO. 5.2: Strengthen legal compliance among stakeholders.**

The strategic interventions are to:

- SI. 5.2.1: Create awareness among stakeholders on policies, strategies, acts, and regulations that support Agricultural Mechanization;
- SI. 5.2.2: Develop guidelines and manuals on compliance requirements; and
- SI. 5.2.3: Incorporate compliance modules into extension services and training programs for operators, mechanics and manufacturers.

## Chapter Three: Strategic Areas and Interventions...

### SO. 5.3. Support monitoring, evaluation and learning on Agricultural Mechanization.

The strategic interventions are to:

- SI. 5.3.1: Develop a systematic monitoring, evaluation and learning framework;
- SI. 5.3.2: Develop data collection and reporting system; and
- SI. 5.3.3: Build institutional capacity of the monitoring, evaluation and learning system.

### 3.3 Agricultural Machinery Needs

To address the current gaps and future demands, it is crucial to estimate the agricultural machinery needs to ensure that well-coordinated systems are put in place to accelerate the availability of agricultural machinery and spare parts through either local production or importation. This will lead to enhanced productivity through increased efficiency and timely farm operations. In addition, estimation of the agricultural machinery needs will enable appropriate interventions by the Government, such as creating an enabling environment through policies that support the suppliers to easily promote, demonstrate, sell, and deliver mechanization inputs to farmers. This section identifies the agricultural machinery needs for crop and livestock production, considering the agroecological differences. The agricultural machinery needs are estimated by considering the evolution of cultivated area and levels of mechanization in the next ten years.

#### 3.3.1. Adopted assumptions

In order to estimate the agricultural machinery needs in the short-term (2025), mid-term (2030), and long-term (2035), we use the available recent data of the MoA and make different assumptions (Tables 5 to 10). The assumptions made are:

- i. The cultivated area is expected to increase in each agroecological zone;
- ii. The yields for various crops are expected to increase;
- iii. The use of Human Power and Animal Power will decrease and an increase in the use of tractors for agricultural operations is expected to be observed by 2035;
- iv. An average of capacity of human power is considered;
- v. An average of capacity of animal power is considered;
- vi. An average of capacity of mechanical power including 2WTs and 4WTs is considered;
- vii. Manual harvest will decrease and the use of small harvester binder, thresher/sheller and small and medium size combine harvesters will increase;
- viii. Mechanical processing at farm or community/cooperative level will increase slightly comparatively to industrial processing; and
- ix. 50 % of processed produce on the farm or at community level will be stored locally (small storage capacity at the farm level and medium size in the community/cooperative).

## Chapter Three: Strategic Areas and Interventions...

### Evolution of cultivated area

The cultivated area is expected to increase across all agroecological zones, driven by factors like population growth, increased mechanized farming practices, climatic conditions, and infrastructure development. The evolution of cultivated area for short-term (2025), mid-term (2030), and long-term (2035) is given in Table 5. The data for the year 2024 were obtained from the diagnosis report (MoA, 2024). The projections for 2030 were done by adding 10% of the arable land to the cultivated area of 2024 and added 20% of the arable land to the cultivated area of 2024 to obtain 2035 data (constant increase of 3.3% per year for all the zones, usually some zones can have more or less depending on the conditions of the natural environment).

The evolution of cultivated area (ha) is presented according to the following Agroecological Zones (AEZ):

- AEZ 1: Southern Highland Zone: Iringa, Mbeya, Njombe, Rukwa, Katavi, Songwe and Ruvuma;
- AEZ 2: Southern Zone: Lindi and Mtwara;
- AEZ 3: Eastern Zone: Morogoro, Tanga, Coastal region, Dar es salaam;
- AEZ 4: Central Zone: Dodoma and Singida;
- AEZ 5: Western Zone: Kigoma and Tabora;
- AEZ 6: Lake Zone: Mwanza, Kagera, Geita, Simiyu, Shinyanga and Mara;
- AEZ 7: Northern Zone: Arusha, Manyara and Kilimanjaro.

**Table 5: Evolution of Cultivated Area (Ha) at Different Agroecological Zones at Short, Medium and Long Terms**

Items	Years			
	2024	2025	2030	2035
AEZ1	4,138,270	4,207,213	4,552,097	4,965,924
AEZ2	786,359	799,459	864,995	943,631
AEZ3	3,038,272	3,088,889	3,342,099	3,645,927
AEZ4	2,548,964	2,591,430	2,803,861	3,058,757
AEZ5	1,208,710	1,228,847	1,329,581	1,450,452
AEZ6	4,228,477	4,298,923	4,651,325	5,074,173
AEZ7	1,452,843	1,477,047	1,598,128	1,743,412

**Sources:** 2024 (MoA), 2025, 2030 and 2035 estimation of the TAMS II authors.

## Chapter Three: Strategic Areas and Interventions...

The cultivated area for the main crops is also expected to increase. Table 6 presents the expected increase in maize, paddy, pulse, sorghum, and wheat.

**Table 6: Evolution of the Cultivated Areas (Ha) of the Main Crops at the Short, Medium and Long Terms**

Crop	Years			
	2021	2025	2030	2035
Maize	4 345 266	4 500 000	4 658 713	4 830 000
Paddy	1 485 125	1 580 000	1 705 941	1 820 000
Pulse	1 397 500	1 397 500	1 397 500	1 397 500
Sorghum	447 567	465 000	479 852	520 000
Wheat	78 274	110 000	152 533	205 000

**Sources:** 2021 and 2025 data are from the Tanzania Agriculture Master Plan (2024). 2030 and 2035 are estimated by the TAMS II authors

### Levels of Mechanization

The projection of levels of mechanization across all agroecological zones shows a clear variation in the use of human power, animal power and mechanical power (Table 7). The mechanization levels across the agroecological zones are expected to continue to vary due to factors such as environmental factors, economic factors, farming systems, and access to infrastructure. In high-potential zones, mechanical power is projected to increase due to increased access to agricultural machinery and increased awareness among farmers of the benefits of mechanization. In zones with mountainous areas, a gradual transition from human and animal draft power to mechanical power is expected. Generally, the projection shows a gradual increase in the use of mechanical power across all zones and a gradual decrease in animal and human power use.

**Table 7: Type of Mechanization Power Ratio Targets for Short, Medium and Long Terms**

Item	Years			
	2024	2025	2030	2035
<b>Human Power (%)</b>				
AEZ 1	44	43.5	35	31
AEZ 2	81	80.5	59	55
AEZ 3	64	63.0	48.0	43
AEZ 4	21	20.5	16.0	15
AEZ 5	67	66.5	53	47
AEZ 6	40	39.5	38	33
AEZ 7	19	19.0	14	13
Human Power National Level	44.0	43.8	35.8	31.9

## Chapter Three: Strategic Areas and Interventions...

Item	Years			
	2024	2025	2030	2035
<b>Animal Power (%)</b>				
AEZ 1	33	32.5	24.0	14
AEZ 2	6	6.5	5.0	5
AEZ 3	8	9.0	5.0	5
AEZ 4	44	44.0	27	19
AEZ 5	26	26.3	23	15
AEZ 6	42	42.0	29	18
AEZ 7	21	21.0	19	18
Animal Power National Level	30.0	29.8	21.0	14.1
<b>Mechanical Power (%)</b>				
AEZ 1	23	24.0	41	55
AEZ 2	13	13.0	36	40
AEZ 3	28	28.0	47	52
AEZ 4	35	35.5	57	66
AEZ 5	7	7.2	24	38
AEZ 6	18	18.5	33	49
AEZ 7	60	60.0	67	69
Mechanical Power National Level	26.0	26.4	43.2	54.0

**Sources:** 2024 from TAMS II Diagnosis, 2025, 2030 and 2035 estimation of authors

The projection of yield of the main crops at short, medium and long terms (Table 8) indicates a steady increase, driven by better access to Agricultural Mechanization inputs and favorable climatic conditions. The paddy has the potential to increase in yield compared to other crops due to improved irrigation systems.

**Table 8: Yield (T/Ha) of the Main Crops at Short, Medium and Long Terms**

Crop	Years			
	2024	2025	2030	2035
Maize	1.5	1.7	2.3	2.97
Paddy	2.4	2.9	5.0	7.17
Sorghum	1.3	1.3	1.5	1.67
Pulse (beans)	1.3	1.5	2.2	2.95
Soya beans	1.2	1.3	1.7	2.12
Wheat	1.4	1.5	2.0	2.50

**Sources:** 2024 from TAMS II Diagnosis, the Tanzania Agriculture Master Plan (2024)

## Chapter Three: Strategic Areas and Interventions...

The use of harvesting and threshing machines in cultivated areas is estimated to increase from 2025 to 2030 and 2035. Table 9 shows that manual harvesting will decrease, leading to increased use of harvesters. This shows the need for harvesting and threshing machines. It was observed that middle combine harvesters will be needed more by farmers in wheat farms, followed by paddy farms and lastly by maize farms.

**Table 9: Shares of Cultivated Areas (%) By Types of Harvesting and Threshing Means at Short, Medium and Long Terms**

Crop	Years														
	2025					2030					2035				
	Manual harvest, %	Harvester binder	Thresher / Sheller	Small combine harvester	Middle size combine harvester	Manual harvest	Harv. binder	Thresher/ Sheller	Small combine harvester	Middle size combine harvester	Manual harvest	Harvester binder	Thresher/ Sheller	Small combine harvester	Middle size combine harvester
Maize	90	0	5	0	8	80	-	10	5	10	50	-	15	10	20
Paddy	70	0	20	10	5	50	5	25	10	10	25	10	30	15	35
Wheat	30	5	10	5	10	20	10	15	10	30	10	15	20	20	40

**Sources:** Estimated by the TAMS II authors

Table 10 shows the evolution of storage for the main crops stored locally. In 2035, the main storage facilities that will be needed more are for maize and sorghum. Other storage facilities are for wheat, paddy, and pulses.

**Table 10: Evolution of the Ratios of Production of the Main Crops Stored Locally (At Farm and Community Level) at Short, Medium, and Long Term**

Main crops, %	Years		
	2025	2030	2035
Maize	30	40	45
Paddy	20	15	10
Pulses	5	10	10
Sorghum	50	55	45
Wheat	15	20	25

**Sources:** Estimated by the TAMS II authors

## Chapter Three: Strategic Areas and Interventions...

### 3.3.2. Different power types need

#### Adopted assumptions

For the calculation of the mechanization needs, we adopted different assumptions as follows:

- i. An adult works manually for 450 hours per year with 6h/day during the work period.
- ii. Each pair of animal draft works 400 hours/year in the short term, 450 hours/year in the medium and 450 hours /year in the long term.
- iii. Each tractor (2WT&4WT) works 300 hours/year in the short term, 400 hours/year in midterm, and 500 hours/year in long term.

The different power types needed for land development, crop and animal production, processing, storage, and transportation will be required to achieve sustainable agricultural production. Table 11 presents the short-term (2025), medium-term (2030), and long-term (2035) requirements for human power, animal power, and agricultural machinery. The number of combine harvesters includes small and medium-sized machines. The number of processing and storage equipment include small capacity silo at farm level and medium capacity silo at community or cooperative level. We suppose that locally the maize production is stored in self-built corn cob silo.

**Table 11: Evolution of Machinery Needs at Short, Medium and Long Term**

Units	Years		
	2025	2030	2035
Four Wheel Tractors (4WTs)	25 980	32 055	34 732
Two Wheel Tractors (2WTs)	17 320	25 186	27 289
Attached equipment for 4WTs	71 445	112 192	138 927
Attached equipment for 2WTs	60 620	88 151	109 157
Combine harvesters	5 520	11 787	24 365
Threshers/shellers	7 537	19 641	36 759
Harvester binders	275	2 011	10 638
Processing machinery	17 424	36 901	54 994
Storage equipment	63 423	88 240	92 220

**Sources:** TAMS II authors calculation

## Chapter Three: Strategic Areas and Interventions...

Table 12 shows the evolution of human and animal power needs in the short, medium, and long terms. Human and animal power use is expected to decrease by 2035.

**Table 12: Evolution of Human Power and Animal Draught Needs at Short, Medium and Long Term**

Item	Years		
	2025	2030	2035
Number of Man-days	150 178 621	132 594 320	129 124 252
Number of pairs of animal draft	120 341	80 648	59 123

**Sources:** TAMS II authors calculation

## CHAPTER FOUR: IMPLEMENTATION ARRANGEMENTS

### 4.1 Key Implementing Actors

TAMS II implementation will be executed through the existing Government adopted structure, which is through the Agriculture Master Plan and the Agricultural Sector Development Programme II (ASDP II). The TAMS II will be implemented over a ten-year period. The key actors that will be involved in the implementation process include Agricultural Sector Lead Ministries (ASLMs), President’s Office Regional Administration and Local Government (PO-RALG), Regional Secretariat, Local Government Authorities (LGAs), service providers / Private Sector (dealers, importers, manufacturers, transporters, agro-processors, and entrepreneurs), financial institutions, research and training institutions, professional associations, and farmers’ organizations/associations. These ASLMs include Ministries dealing with Agriculture; Livestock and Fisheries; Water; Land; Housing and Human Settlements Development; Industries and Trade; Finance; Planning and Investment; and the Prime Minister’s Office.

The roles/responsibilities of various stakeholders involved in the implementation of TAMS II are as outlined in the stakeholder’s analysis section.

#### 4.1.1. Stakeholder’s Analysis

The stakeholder analysis was carried out to ascertain various players in the Mechanization project operating environment for possible strategic partnerships to achieve the project’s results, as indicated in Table 13.

**Table 13: Stakeholder’s Analysis Matrix**

Name/Group of Stakeholders	Role of Stakeholder	Expectations of Stakeholders from the Strategy	Expectations of the Strategy from the Stakeholder	Potential impacts to the Strategy
Ministry dealing with Agriculture	<ul style="list-style-type: none"> <li>Lead and coordinate AMS policy formulation, review, and implementation;</li> <li>Mobilize resources; build capacity;</li> <li>Disseminate mechanization technologies;</li> <li>Advise on farm machinery standards;</li> <li>Oversee research &amp; extension in mechanization.</li> <li>Develop irrigation infrastructure;</li> <li>Integrate mechanization in water saving technologies;</li> <li>Support pumping, drainage, and land preparation under irrigation schemes</li> </ul>	<ul style="list-style-type: none"> <li>Increase in production, productivity and efficiency</li> <li>Employment generation</li> </ul>	<ul style="list-style-type: none"> <li>Smooth implementation of the strategy</li> </ul>	High

## Chapter Four: Implementation Arrangements...

Name/Group of Stakeholders	Role of Stakeholder	Expectations of Stakeholders from the Strategy	Expectations of the Strategy from the Stakeholder	Potential impacts to the Strategy
Ministry dealing with Livestock and Fisheries	<ul style="list-style-type: none"> <li>Ensure mechanization supports livestock operations (e.g., feed production, pasture management),</li> <li>Promote mechanized equipment in fisheries and animal husbandry;</li> </ul>	<ul style="list-style-type: none"> <li>Improved livestock productivity;</li> <li>Modernized fisheries;</li> <li>Reduced drudgery in livestock handling</li> </ul>	<ul style="list-style-type: none"> <li>Provision of sector-specific mechanization needs and feedback</li> </ul>	High
Ministry dealing with Water / Irrigation	<ul style="list-style-type: none"> <li>Develop irrigation infrastructure;</li> <li>Integrate mechanization in water saving technologies;</li> <li>Support pumping, drainage, and land preparation under irrigation schemes</li> </ul>	<ul style="list-style-type: none"> <li>Increased irrigated land;</li> <li>Improved water-use efficiency</li> </ul>	<ul style="list-style-type: none"> <li>Provide infrastructure and policies supportive of mechanization</li> </ul>	High
Ministry dealing with Planning and Investment	<ul style="list-style-type: none"> <li>PO-Planning &amp; Investment ensures that mechanization investments align with national development plans and promote both domestic and foreign investment in Agricultural Mechanization projects. It oversees the implementation of mechanization investment initiatives, assisting in prioritizing, approving, and evaluating budget allocations and incentives for the private sector involved in mechanization.</li> </ul>	<ul style="list-style-type: none"> <li>Attract more investment;</li> <li>Enhanced policy coherence;</li> <li>Resource mobilization</li> </ul>	<ul style="list-style-type: none"> <li>Prioritization and mainstreaming mechanization in national planning</li> </ul>	High
Ministry dealing with Finance	<ul style="list-style-type: none"> <li>Allocate budgets; finance procurement/subsidies for mechanization;</li> <li>Incentivize private investment via fiscal policy; mobilize funding from development partners.</li> </ul>	<ul style="list-style-type: none"> <li>Increased revenue;</li> <li>Sustainable financing for mechanization</li> </ul>	<ul style="list-style-type: none"> <li>Provide timely and sufficient budget; Design incentives for adoption</li> </ul>	High
Ministry dealing with Works / Transport	<ul style="list-style-type: none"> <li>Improve transport infrastructure (roads, feeder roads) to facilitate the movement of machinery and access to markets;</li> <li>Ensure accessibility for machinery supply chains.</li> </ul>	<ul style="list-style-type: none"> <li>Better road access for machinery and inputs</li> </ul>	<ul style="list-style-type: none"> <li>Provide reliable infrastructure</li> </ul>	Medium - High
Ministry dealing with Land, Housing and Human Settlements Development	<ul style="list-style-type: none"> <li>Secure land for agriculture;</li> <li>Ensure land tenure and title deeds;</li> <li>Facilitate land use planning to enable mechanized farms to operate effectively.</li> </ul>	<ul style="list-style-type: none"> <li>Security of tenure;</li> <li>Reduced conflicts;</li> <li>Increased land under mechanization</li> </ul>	<ul style="list-style-type: none"> <li>Provide clear land allocation for mechanized farming</li> </ul>	High
Ministry dealing with Industries and Trade	<ul style="list-style-type: none"> <li>Support local manufacture/import of machinery;</li> <li>Ensure standards and regulations;</li> <li>Facilitate private sector participation;</li> <li>Promote agro-processing linked to mechanization.</li> </ul>	<ul style="list-style-type: none"> <li>Increased local manufacturing capacity;</li> <li>Fair trade environment</li> </ul>	<ul style="list-style-type: none"> <li>Provide standards and facilitate trade policies</li> </ul>	High
Prime Minister's Office	<ul style="list-style-type: none"> <li>The PMO has a general oversight role for major agricultural sector programmes (e.g., ASDP II). It ensures different ministries, agencies, and stakeholders align their actions towards common goals</li> </ul>	<ul style="list-style-type: none"> <li>Effective coordination;</li> <li>Policy coherence</li> </ul>	<ul style="list-style-type: none"> <li>Provide leadership and enforcement of accountability</li> </ul>	High

## Chapter Four: Implementation Arrangements...

Name/Group of Stakeholders	Role of Stakeholder	Expectations of Stakeholders from the Strategy	Expectations of the Strategy from the Stakeholder	Potential impacts to the Strategy
President's Office Regional Administration and Local Government (PO-RALG)	<ul style="list-style-type: none"> <li>PO-RALG will coordinate the implementation of TAMS II at regional and district levels.</li> </ul>	<ul style="list-style-type: none"> <li>Resources for implementation;</li> <li>Capacity building</li> </ul>	<ul style="list-style-type: none"> <li>Provide effective local coordination and monitoring</li> </ul>	High
Regional Secretariat	<ul style="list-style-type: none"> <li>The regional secretariat will coordinate and provide technical advice to the Local Government Authorities (LGAs) on implementing TAMS II. It will also monitor and evaluate TAMS II's progress at the regional level.</li> </ul>	<ul style="list-style-type: none"> <li>Support and guidance;</li> <li>Timely reporting</li> </ul>	<ul style="list-style-type: none"> <li>Provide accurate monitoring and technical support</li> </ul>	Medium - High
Local Government Authorities (LGAs)	<ul style="list-style-type: none"> <li>LGAs will provide technical staff for the implementation of TAMS II and will monitor and evaluate its progress at the district level.</li> </ul>	<ul style="list-style-type: none"> <li>Training opportunities;</li> <li>Adequate resources</li> </ul>	<ul style="list-style-type: none"> <li>Deliver frontline services and supervision</li> </ul>	High
Service Providers (dealers, importers, manufacturers, agro-processors, transporters and entrepreneurs)	<ul style="list-style-type: none"> <li>Ensure availability of quality mechanization inputs</li> <li>Tractor hire provision</li> <li>Provision of after-sale services, repair, and maintenance</li> </ul>	<ul style="list-style-type: none"> <li>Profitability;</li> <li>Supportive business environment</li> </ul>	<ul style="list-style-type: none"> <li>Ensure reliable supply, fair pricing, quality assurance</li> </ul>	High
Financial Institutions (Banks, Trust funds, and lease financing)	<ul style="list-style-type: none"> <li>Provide financial support in the form of credit to dealers, manufacturers, importers, agro-processors, transporters, farmers, and farmers' organizations.</li> </ul>	<ul style="list-style-type: none"> <li>Reduced risk;</li> <li>Government guarantees;</li> <li>Increased clients</li> </ul>	<ul style="list-style-type: none"> <li>Provide affordable credit and innovative financial products</li> </ul>	High
Research and Training Institutions	<ul style="list-style-type: none"> <li>Conducting research on the mechanization technologies</li> <li>Dissemination of knowledge of innovations in Agricultural Mechanization that address the specific needs and challenges to end users</li> <li>Development of training and education programs to help farmers learn how to operate, maintain, and generate income from the mechanized equipment</li> </ul>	<ul style="list-style-type: none"> <li>Research funding;</li> <li>Adoption of innovations</li> </ul>	<ul style="list-style-type: none"> <li>Conduct relevant research;</li> <li>Train stakeholders</li> </ul>	High
Farmers' Organizations / Associations/ Cooperatives	<ul style="list-style-type: none"> <li>help farmers solve common problems in relation to agricultural machinery, inputs, credit, technical knowledge, and marketing of produce.</li> </ul>	<ul style="list-style-type: none"> <li>Increased bargaining power;</li> <li>Access to credit/ machines</li> </ul>	<ul style="list-style-type: none"> <li>Mobilize members;</li> <li>Ensure compliance</li> </ul>	Medium - High
Tanzania Cooperative Development Commission (TCDC).	<ul style="list-style-type: none"> <li>link cooperative societies with various stakeholders such as financial institutions and other development partners to access funding for agricultural equipment</li> <li>encourage cooperative societies to establish centers and purchase agricultural equipment</li> </ul>	<ul style="list-style-type: none"> <li>Supportive policies;</li> <li>Strengthened cooperatives</li> </ul>	<ul style="list-style-type: none"> <li>Mobilize cooperatives to invest in machinery</li> </ul>	Medium - High

## Chapter Four: Implementation Arrangements...

### 4.2 Institutional Framework

The strategy management will be under two committees (Figure 3), which will be formed in the Ministry dealing with Agriculture. These are (i) National Agricultural Mechanization Steering Committee (NAMSC) and (ii) National Agricultural Mechanization Technical Committee (NAMTC). The implementation of TAMS II at the national level will be streamlined within the normal operations of the Ministry dealing with agriculture, in the Division dealing with Agricultural Mechanization. The Division will be responsible for the overall supervision of the implementation of TAMS II. Activities to be carried out will include: (i) developing TAMS II implementation plan for the strategic areas; (ii) compilation of TAMS II budget for each financial year; (iii) Monitoring, Evaluation and Learning of physical and financial performance of the strategic areas.

#### 4.2.1 National Agricultural Mechanization Steering Committee

The National Agricultural Mechanization Steering Committee (NAMSC) shall be the highest decision-making body for overseeing Agricultural Mechanization interventions in the country. Currently, NAMSC is not yet established. Its composition will include representatives from the ASLMs, key Agricultural Mechanization stakeholders including from the Private Sector, cooperating partners and NGOs.

The NAMSC will be led by a chairperson who will be the Permanent Secretary, Ministry dealing with Agriculture. The Director responsible for Agricultural Mechanization shall be the secretary to the Steering Committee.

The following will be the core responsibilities of the Steering Committee:

- i. Oversee the development and revision of appropriate policies and legislation to facilitate and catalyze the implementation of the National Agricultural Mechanization Strategy.
- ii. Provide policy guidance to facilitate the mainstreaming and integration of agricultural mechanization activities in National Development Plans, Sector Policies, strategies and Plans including among the Private Sector and non-state actors.
- iii. Oversee the Monitoring, Evaluation and Learning of the implementation of the Agricultural Mechanization implementation Plan and relevant reports.
- iv. Provide policy guidance to facilitate resource mobilization for Agricultural Mechanization interventions.
- v. Provide policy guidance to ensure that Agricultural Mechanization programmes are complementary and result in sustained positive impacts on the economy and people's livelihoods.

#### 4.2.2 National Agricultural Mechanization Technical Committee

The National Agricultural Mechanization Technical Committee (NAMTC) shall comprise of representatives from ASLMs and key stakeholders including from the Private Sector. The NAMTC shall be the main advisory body to the National Agricultural Mechanization Steering Committee on policy and TAMS II implementation. The committee will be led by the chairperson, who will be the Director responsible for Mechanization, in the Ministry dealing with Agriculture. One member from the mentioned institutions shall be the secretary to the Technical Committee

The Technical Committee will have the following core responsibilities:

## Chapter Four: Implementation Arrangements...

- i. Formulate and/or review in consultation with stakeholders, appropriate policies and legislation to facilitate/catalyze the implementation of the National Agricultural Mechanization Strategy and accordingly recommend these to the NAMSC.
- ii. Formulate in collaboration with stakeholders, the Annual National Agricultural Mechanization Implementation Plan.
- iii. Coordinate the implementation of Agricultural Mechanization initiatives, programmes and projects.
- iv. Report to the Steering Committee on progress made in the implementation of the TAMS II activities.

The linkage between the National Agricultural Mechanization Steering Committee and National Agricultural Mechanization Technical Committee (NAMTC) is presented in Figure 3.

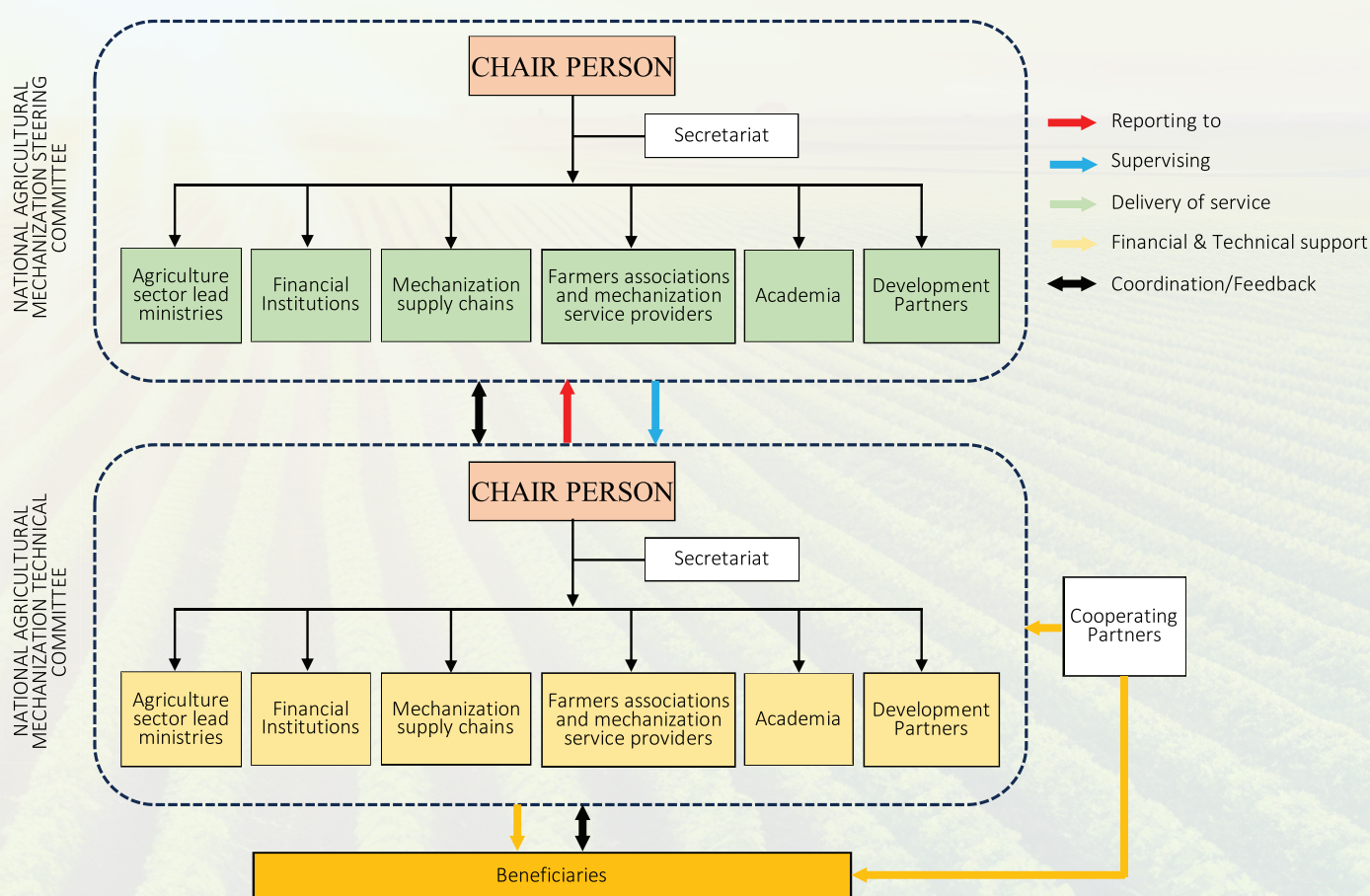


Figure 3: The National Agricultural Mechanization Steering Committee and National Agricultural Technical Committee

### 4.3 Operation Plan - Work Plan and Financial Estimates of TAMS II

#### 4.3.1 Work Plan

TAMS II will be implemented in ten years. It is aligned with other national and sector policy frameworks such as DIRA 2050, and ASDP II. The work plan is shown in Annex 4.

## Chapter Four: Implementation Arrangements...

### 4.3.2 Financial Estimates of TAMS II

Table 14 shows a summary of financial estimates for implementing the various activities over the first five years. These are only indicative of the funding needs. The detailed budget is shown in Annex 5.

**Table 14: Financing Estimates for the Tanzania Agricultural Mechanization Strategy II (TAMS II)**

STRATEGIC OBJECTIVES	BUDGET ("x 1000" Tshs)					
	FY 1	FY 2	FY 3	FY 4	FY 5	TOTAL
1. Improve access and availability of agricultural machinery, technologies and services	76 462 886.60	59 170 721.65	71 782 273.20	31 900 938.14	26 615 731.96	265 932 551.55
2. Improve manufacturing, commercialization, maintenance of machinery and increasing financing in Agricultural Mechanization	13 884 020.62	130 100 793.81	68 090 484.54	67 420 381.44	9 688 422.68	289 184 103.09
3. Promote Climate Smart Agriculture technologies and practices	14 055 357	26 788 622	5 867 347	6 663 265	397 959	53 772 550
4. Improve Research and Development, Training, and Extension in Agricultural Mechanization	34 793 814.43	31 701 030.93	12 113 402.06	29 484 536.08	26 597 938.14	134 690 721.64
5. Improve policy and legal frameworks	20 448 195.88	2 415 051.55	12 104 072.16	5 379 587.63	4 482 989.69	44 829 896.91
<b>GRAND TOTAL</b>	<b>159 644 274.53</b>	<b>250 176 219.94</b>	<b>169 957 578.96</b>	<b>140 848 708.29</b>	<b>67 783 041.47</b>	<b>788 409 823.19</b>

### 4.3.3 Financing

The implementation of the strategy will depend on financial support from Government budget, private sector, international community as well as individual contributions. However, a coordinated approach is required to ensure that the collected funds are used to address the mechanization issues presented in this strategy. The Government will be responsible for mobilizing and managing funds from various sources.

The TAMS II funds activities will be coordinated through the ministry dealing with agriculture in collaboration with other sector lead ministries and other stakeholders.

The expected sources of funding are:

- i. **National funds:** The main national funds are revenue collected by the Government through taxes. These funds are allocated to various MDAs and Local Government Authorities through their Medium Term Expenditure Framework that will be reflected in their both recurrent and development budgets. Other sources of domestic funds include funds obtained through Public Private Partnership and funds from local NGOs. These funds can be drawn for implementation of various planned activities by following the arrangements established under such funds.
- ii. **International funds:** International Funds include the World Bank Funds, Africa Development Bank (ADB) Funds and Bilateral Funds, which are provided in the arrangement between one of the donor countries and a developing country, institution, or NGO. Bilateral funds are mainly channelled through special assistance agencies in donor countries. Additional official assistance is channelled from donor to recipient countries through multilateral organisations and through international NGOs. Some bilateral donors have a regional focus whilst others prefer regional networks, for example SADC, EAC, AU, etc.

## Chapter Four: Implementation Arrangements...

- iii. Multilateral Agreement Funds: These include funds, which were established under United Nations Frameworks and multilateral agreements to facilitate implementation of mechanization activities.

### 4.4 Monitoring, Evaluation and Learning (MEL)

#### 4.4.1 Overview

The implementation of TAMS II needs to be closely monitored, evaluated and learned. Therefore, there will be a monitoring, evaluation and learning system that will play the following major roles:

- i. Design, coordination and implementation of the Monitoring, Evaluation and Learning framework, research, and learning by developing a systematic framework to improve the qualitative and quantitative evidence gathered through TAMS II lifetime;
- ii. Providing technical assistance to the implementation of TAMS II, particularly in relation to monitoring, reporting and governance issues;
- iii. Steering and controlling through regular tracking and reporting of progress for informed decisions underlying the effective and efficient coordination of TAMS II; and
- iv. Accountability against plans and budget resources for the implementation of TAMS II.

A detailed explanation of the specific functions of the Monitoring, Evaluation and Learning system is presented in the following paragraphs.

#### 4.4.2 Monitoring, Evaluation and Learning System

The monitoring, evaluation and learning (MEL) system will generate requisite data to inform the implementation of TAMS II. Specifically, the MEL system intends to establish benchmarks, a guide working plan and budget, performance and control. In addition, the results-based monitoring system will track how effectively Ministries, Independent Departments and Executive Agencies (MDAs) and LGAs are demonstrating over time the extent to which TAMS II is achieving its strategic objectives. The system will track implementation (inputs and activities) and results (outputs, outcomes and impact).

The monitoring process will help track the performance of the strategy in terms of activities, implementation and expected outputs, determine whether the TAMS II implementation is on track and assess how much is being achieved. Therefore, monitoring TAMS II will provide regular updates on the progress made in implementing the objectives. Similarly, this monitoring system will collect routine data on indicators, compare actual results against targets and report progress, including implementation challenges.

#### 4.4.3 Results-Based Monitoring

Although outputs are often noted, outcomes and impacts are the main focus of MEL as implementation processes (inputs and activities) along the results chain. The MEL system will use a logical framework as a management tool to monitor results, including assumptions or risks that may influence the success and failure of TAMS II interventions. Moreover, the system requires taking action in response to what is measured and reported. If monitoring shows that the plan is off track, then taking appropriate interventions or corrective measures will be crucial or revising the implementation strategies accordingly.

## Chapter Four: Implementation Arrangements...

The TAMS II will be a living document that will require adjustments based on MEL results and condition change. Therefore, monitoring will be essential for providing necessary information for accountability purposes. Designed performance indicators of MEL will measure the achievement of the objectives of TAMS II coordinated by MoA in collaboration with the other ASLMs. Reports on the progress of the implementation of TAMS II will be quarterly and annually.

### 4.4.4 Monitoring, Evaluation and Learning Framework

The Monitoring, Evaluation and Learning Framework of TAMS II is a logical framework (log frame) which presents the alignment of objectives with outputs, outcomes and impact indicators. The framework includes projected indicator targets, means of verification and assumptions for monitoring progress, and monitoring, evaluation and learning plans detailing information gathering against the indicators. The MEL framework will employ performance output indicators of TAMS II for monitoring, evaluation and learning purposes and the trend is reported annually. At the same time, the framework will use output indicators in tracking the outcome indicators annually.

Notably, baseline data and targets against results indicators will be collected at the beginning of the implementation of TAMS II. Annex 6 shows the log frame for monitoring the results of TAMS II. Subsectors will prepare separate log frames using Annex 6 with indicator baselines and target values that will help consolidate the TAMS II log frame.

### 4.4.5 Results-Based Evaluation

Results-based evaluation (RBE) system will analyse factors that led to the achievements or non-achievements of intended results and assess specific causal contributions of activities to outcomes and the implementation process. This evaluation system will further explore unintended effects, provide lessons learnt, highlight significant accomplishments and recommendations for improvement. The TAMS II will be evaluated twice in a phase of five (5) years (at the mid and at the end of the implementation phase).

### 4.4.6 Theory of Change (ToC)

This Theory of Change illustrates the Monitoring, Evaluation and Learning (MEL) framework of the Agricultural Mechanization Strategy. Mechanization centers are emphasized as a key output, reflecting their importance in enabling access, training, and sustainable mechanization services for farmers as shown in Figure 4.

## Chapter Four: Implementation Arrangements...

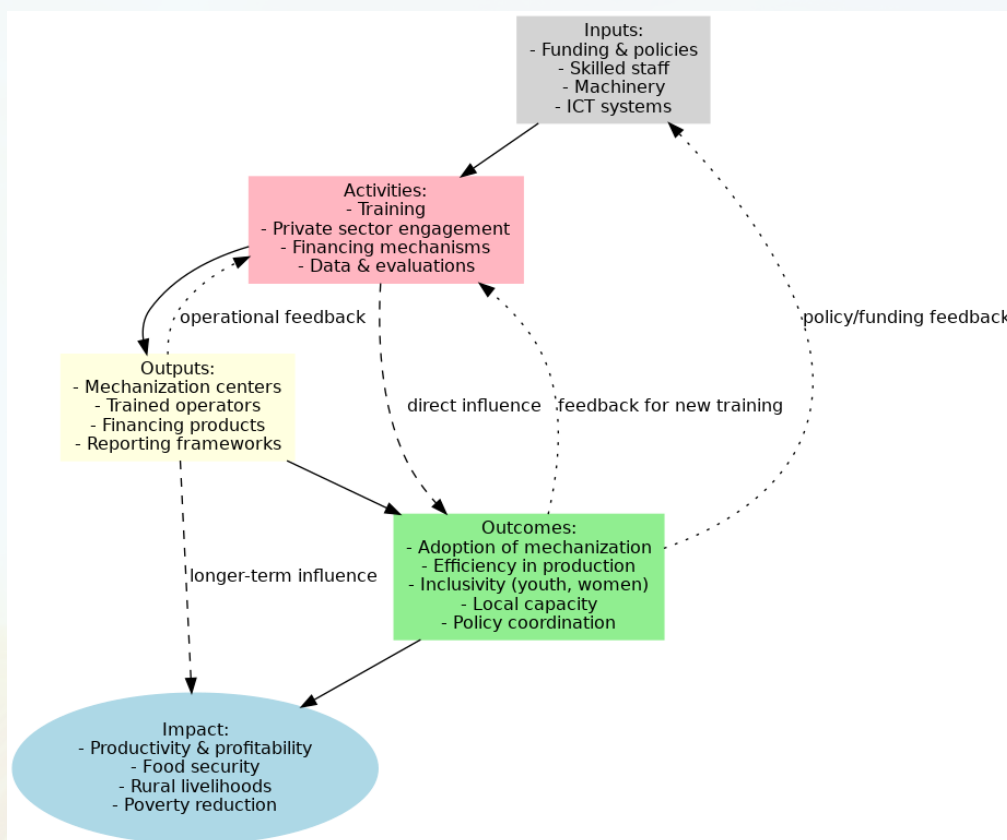


Figure 4: Theory of Change of MEL

### 4.4.7 Reporting Framework

#### Performance Reporting

MEL reports are expected to provide feedback on the progress made and the results achieved in the implementation of TAMS II and inform decision-making organs. Generally, it is expected that the reports should contain narrative, financial and results against the progress of the indicators. Further, the reports are expected to highlight challenges and learn lessons and best practices. The main MEL reports to be generated include:

- i. Quarterly Progressive reports,
- ii. Annual Performance reports,
- iii. Mid -Term Review reports,
- iv. Final Evaluation reports, and
- v. Study and survey reports.

The reporting schedule and the types of MEL reports are presented in Table 15.

## Chapter Four: Implementation Arrangements...

**Table 15: Performance Reporting Schedule**

Type of Report	Contents	Frequency
1. Quarterly Progressive Report	Consolidated reports will cover progress on cumulative targets, milestones, and expenditures against annual plans and budgets.	Quarterly
2. Annual Performance Report	Consolidated reports on targets and outcome monitoring against the annual plan and budget, focusing on assessing effectiveness and efficiency.	Annually
3. Mid-Term Review Report	Report against strategic objectives and outcomes, mainly focusing on assessing whether TAMS II implementation is on track regarding evaluation criteria, namely relevance, effectiveness, efficiency, sustainability, and impacts.	Second Quarter of 3 <sup>rd</sup> FY of TAMS II
4. Final Evaluation Report	Report against evaluation criteria focusing on relevance, effectiveness, efficiency, sustainability, impacts, lessons learned, and recommendations.	End of 5 <sup>th</sup> FY of TAMS II
5. Study and Survey Reports	Findings and recommendations for improvement on specific Agricultural Mechanization issues.	As per need

### Reporting Plan

#### *Internal Reporting Plan*

TAMS II implementation will be reported quarterly and annually. The coordination and technical working team will use quarterly progress reports for internal use. The annual progress reports will be the official progress report on the implementation of TAMS II, to be submitted to the steering committee and shared externally.

#### *External Reporting Plan*

The plan will require the submission of four reports to various external stakeholders from institutions implementing TAMS II. These reports include annual performance, financial, mid-term, and final year evaluation, and donor-funded projects. In addition, the reporting plan will follow statutory requirements as directed from time to time and Government performance reporting requirements. Table 16 shows an external reporting plan. Annexes 7 and 8 show the template for preparing financial reports to evaluate the progress of TAMS II.

## Chapter Four: Implementation Arrangements...

**Table 16: External Reporting Plan**

SN	Type of Report	Recipient	Frequency	Responsible Entity	Responsibility
1.	Financial Statements	Controller and Auditor General (CAG)	Annually	MoA	To avail all necessary documents to CAG such as progress reports, and internal audit report.
2.	Annual Performance Report	ASLMs, DPs, relevant stakeholders	Annually	MoA	Compile reports from stakeholders
3	Mid-Term Report	ASLMs, DPs, relevant stakeholders.	After 2.5 years	MoA	Prepare mid-term report
4.	Five-Year Evaluation Report (FYER)	ASLMs, DPs, CAG	After every five years	MoA	Prepare FYER

### Feedback Mechanism and Use of Monitoring, Evaluation and Learning Information

Establishing a feedback mechanism between report producers and end-users will become fundamental. This feedback mechanism may include seminars, workshops, review forums and stakeholders' meetings. This mechanism will lead to stakeholders sharing achievements, experiences and challenges, including identifying collective actions to address challenges. Moreover, the mechanism is expected to improve reports' quality and timely submission.

The main use of result findings arising from Monitoring, Evaluation and Learning (MEL) reports for TAMS II will be to:

- i. Assist in making objective decisions, including operational resource allocation decisions;
- ii. Help in demonstrating results as part of accountability;
- iii. Assist in communicating better to build Public trust;
- iv. Facilitate preparation and justification of budget requests;
- v. Contribute to motivating staff to continue making improvements in the implementation of their plans;
- vi. Provide information on assessing TAMS II contribution to overall agricultural sector and reviews of national policies and strategies;
- vii. Support medium-term strategic and other long-term planning efforts by providing baseline information and later tracking progress;
- viii. Provide data for special in-depth projects and programme planning, implementation and evaluations; and
- ix. Assist in initiating in-depth examinations of existing performance problems and needed corrections.

## Chapter Four: Implementation Arrangements...

### 4.5 Risk Management

The risk management plan outlines the expected risks and mitigation measures associated with the implementation of the TAMS II as shown in Table 17.

**Table 17: Risk Management Plan**

S/N	Risk	Mitigation
1	Breakdowns of machinery due to poor maintenance or inappropriate technology for local conditions resulting into increased operational costs and/or maintenance costs.	<ul style="list-style-type: none"> <li>Implement a preventive maintenance program.</li> <li>Use reliable, locally-tested machinery.</li> <li>Establish a network of repair centres with readily available parts.</li> </ul>
2	Limited skilled labour and technical experts to operate and maintain machines resulting into inefficiency in operations.	<ul style="list-style-type: none"> <li>Create partnerships with technical institutions and agricultural extension services for skills development.</li> <li>Provide hands-on training programs for farmers and machinery operators.</li> </ul>
3	High capital investment required to purchase machinery and equipment leading to low production and productivity.	<ul style="list-style-type: none"> <li>Negotiate bulk purchasing or leasing agreements to reduce costs.</li> <li>Develop subsidies or financial support schemes to assist smallholder farmers.</li> <li>Introduce machinery hiring service centers</li> </ul>
4	Limited access to financing for smallholder farmers and cooperatives to purchase machinery contributing into low production and productivity.	<ul style="list-style-type: none"> <li>Partner with financial institutions to offer low-interest loans and microfinance options.</li> <li>Create a Government-backed funding mechanism to support machinery acquisition.</li> </ul>
5	Effects of climate change resulting into inefficient machinery operations in agricultural production.	<ul style="list-style-type: none"> <li>Encourage CSA (e.g conservation agriculture practices that complement mechanized farming).</li> <li>Create awareness on weather forecasts</li> </ul>
6.	Changing Government policies and regulations related to subsidies, import taxes and agricultural practices leading into changing in priorities.	<ul style="list-style-type: none"> <li>Engage in continuous dialogue with Government bodies to ensure stability and support for mechanization programs.</li> <li>Highlight opportunities and impacts related to subsidies provision.</li> <li>Advocate for long-term policies that support mechanization, such as subsidies for farmers and tax incentives for manufacturers.</li> </ul>
7.	Poorly maintained road networks, inadequate storage facilities, and inadequate power supply in rural areas to support mechanization leading into increased postharvest loses.	<ul style="list-style-type: none"> <li>Prioritize investments in infrastructure (roads, storage facilities and power supply) in areas where mechanization is to be rolled out.</li> <li>Establish partnerships with infrastructure development agencies to enhance rural access.</li> </ul>

## Glossary of Terms

---

**Academic and Research Institutions:** Higher learning institutions and research institutes dealing with agricultural-related matters.

**Agricultural Machinery:** Encompasses a wide range of mechanical devices and tools used in farming and agriculture.

**Agricultural Mechanization:** The use of machinery and equipment to enhance the efficiency and effectiveness of agricultural operations, from land clearing to processing operations. These include operations such as land clearing, ploughing, planting, weeding, crop protection, harvesting, transportation and processing.

**Appropriate Mechanization:** Machinery and equipment that are affordable, maintainable, and suitable for the local farming conditions.

**Baseline Survey / Field Survey:** The survey conducted so as to understand the current status of Agricultural Mechanization before strategy implementation.

**Capacity Building:** Activities aimed at strengthening the skills, competencies, and abilities of individuals and institutions involved in Agricultural Mechanization.

**Climate Smart Agriculture:** An approach to farming that aims to sustainably increase agricultural productivity, enhance resilience to climate change, and reduce greenhouse gas emissions.

**Conservation Agriculture:** An approach to agricultural management based on three principles, which are minimum soil disturbance, retention of crop residues or other soil surface cover and use of crop rotations.

**Equipment:** Refers to larger powered machinery used for more significant farming operations.

**Farm Power:** The energy available to perform agricultural work, derived from human, animal, and mechanical sources.

**Hiring Services Providers:** Individuals who rent or lease machinery and equipment to farmers, often smallholders, to reduce the cost burden of ownership.

**Implements:** Attachments pulled or pushed by tractors or other machines to perform specific tasks, such as plowing, planting, or harvesting.

**Institutional Environment:** Enabling environment of policies, institutions and regulations that facilitate the increased use of agricultural machinery.

**Local Manufacturers:** A company or individual based within a country that is involved in the design, modification, and fabrication of agricultural machinery, tools, and equipment.

**Mechanization Centers:** Centers equipped with agricultural machinery and implements, including tractors and power tillers, which are used to offer services to farmers.

**Mechanization Demand:** Is the need for machinery and equipment to perform tasks previously done by hand or animal labour. In this document, mechanization demand refers to the category of stakeholders that need Agricultural Mechanization for their operations.

**Mechanization Extension Services:** These services provide information, training, and support to farmers, helping them adopt new technologies and practices.



## Glossary of Terms...

---

**Mechanization Service Providers:** Individuals who offer machinery-based services to farmers. These include tractor hiring service providers, agricultural machinery dealers and suppliers, financial institutions.

**Mechanization Supply Chain:** Is a sequence of processes (including decision-making and execution) and flows of materials, information and monetary resources that aim to meet farmers' requirements and needs.

**Precision Agriculture:** Farming management concept based on the use of technology and data to optimize field-level management.

**Public-Private Partnership (PPP):** A collaborative agreement between the Government and the Private Sector to invest in projects or deliver services to enhance Agricultural Mechanization.

**Smallholder Farmers:** Farmers managing small plots of land, often with limited resources, who are a key focus of mechanization strategies in developing contexts.

**Sustainability:** Mechanization practices that meet current agricultural needs without compromising future productivity or environmental health.

**Mechanization Value Chain:** The full range of activities from production to final consumption, including how mechanization adds value at each stage.

## REFERENCES

---

- ADB, (2023). Tanzania: Country Food and Agriculture Delivery Compact. <https://www.afdb.org/en/documents/tanzania-country-food-and-agriculture-delivery-compact> Visited on 7 June 2024.
- Diao, X., Silver, J., & Takeshima, H. (2016). Agricultural Mechanization and agricultural transformation (Vol. 1527). Intl Food Policy Res Inst.
- Gifford, R. (1981). Agricultural Mechanization in development: Guidelines for strategy formulation. (No. 45, pp. 77-pp).
- Houmy et al, 2013. Agricultural Mechanization in Sub-Saharan Africa: Guidelines for preparing a strategy. *Integrated Crop Management: 22*
- MoF, United Republic of Tanzania. (2025). *The Economic Survey, 2024*. [https://www.mof.go.tz/uploads/documents/en-1757496956-ECONOMIC%20SURVEY%20BOOK,%202024%20SEPT\\_SENT%20FINAL.pdf](https://www.mof.go.tz/uploads/documents/en-1757496956-ECONOMIC%20SURVEY%20BOOK,%202024%20SEPT_SENT%20FINAL.pdf)
- MoA, (2024). Assessment of Agricultural Mechanization in Tanzania.
- Ndare, D. W. (2019). *Soil characterization and effects of n, p and k on the growth, yield and root quality of cassava (manihot esculenta crantz) in the lake zone of Tanzania* (Doctoral dissertation, Sokoine University of Agriculture).
- Sims, B., & Kienzle, J. (2016). Making mechanization accessible to smallholder farmers in sub-Saharan Africa. *Environments*, 3(2), 11.
- TMA, (2021). Statement on the Status of Tanzania Climate in 2021.
- URT, (2019). National Rice Development Strategy Phase II (NRDS II) 2019-2030. [https://riceforafrica.net/wp-content/uploads/2021/09/NRDS2\\_Tanzania\\_en.pdf](https://riceforafrica.net/wp-content/uploads/2021/09/NRDS2_Tanzania_en.pdf).
- URT, (2022). *Sensa ya Watu na Makazi ya Mwaka: Matokea ya Mwanzo*. NBS, Dar es salaam, Tanzania. 119 p.
- WB, (2023). Poverty and Economic Policy Global Departments. <https://thedocs.worldbank.org/en/doc/bae48ff2fetc5a869546775b3f010735-0500062021/related/mpo-tza.pdf>. Accessed on 28 May 2025.

## ANNEXES

### Annex 1: Mechanization Power Type Ratio Per Agro Ecological Zones (MoA, 2024)

Zone	Hand hoe (%)	Draught Animal (%)	Tractor (%)
AEZ 1	44	33	23
AEZ 2	81	6	13
AEZ 3	64	8	28
AEZ 4	21	44	35
AEZ 5	67	26	7
AEZ 6	39	42	18
AEZ 7	19	21	60
National level	44	30	26

### Annex 2: SWOC Matrices

#### SWOC Matrix for Agricultural Mechanization Demand

Strengths	Weaknesses
<ol style="list-style-type: none"> <li>1. Availability of agricultural machinery</li> <li>2. Government intervention</li> <li>3. Private Sector involvement</li> <li>4. Innovation and technology adoption</li> <li>5. Abundant natural resource (presence of suitable land for agriculture)</li> <li>6. High number of locally manufactured flour milling machines</li> </ol>	<ol style="list-style-type: none"> <li>1. Limited access to financing</li> <li>2. Limited technical skills and knowledge in management of farm machineries</li> <li>3. Poor roads for accessibility to farms</li> <li>4. Poor maintenance facilities</li> <li>5. Low adoption of conservation agriculture</li> </ol>
Opportunities	Challenges
<ol style="list-style-type: none"> <li>1. Increasing demand for agricultural machinery</li> <li>2. Government support</li> <li>3. Innovation and technology adoption</li> <li>4. Marketing opportunities to farmers</li> </ol>	<ol style="list-style-type: none"> <li>1. Most smallholder farmers cannot afford to purchase tractors or other modern farming equipment</li> <li>2. Appropriateness of farm technologies</li> <li>3. Low quality of machines</li> <li>4. Limited number of well trained and certified operators</li> <li>5. Few farmers formed cooperatives</li> <li>6. Insufficient mechanization tools which are related to conservation agriculture</li> <li>7. Insufficient access to communication networks and the internet in rural areas hinder the adoption of Agricultural Mechanization</li> </ol>

## Annex 2: SWOC Matrices...

### SWOC Matrix for Institutional Environment

Strengths	Weaknesses
<ol style="list-style-type: none"> <li>1. Ministry of Agriculture established department of mechanization on 2008</li> <li>2. Willingness of the Government to improve mechanization through introducing various program e.g. agricultural policy of 2013 and ASDP II.</li> </ol>	<ol style="list-style-type: none"> <li>1. Agricultural land has no legal protection.</li> <li>2. Spare parts of agricultural machinery are still taxed</li> </ol>
Opportunities	Challenges
<ol style="list-style-type: none"> <li>1. Availability of draft animal power</li> <li>2. Tax exemption on Agricultural Implement custom tariff act 1976</li> <li>3. Availability of financial institutions eg. TADB, AGITF, and Cooperative Bank of Tanzania</li> </ol>	<ol style="list-style-type: none"> <li>1. Inadequate research of mechanization technologies in Tanzania</li> <li>2. Adapt of national curriculum for machinery operators</li> <li>3. Inadequate machineries operator</li> <li>4. Inadequate disbursement of budget requested/planed for mechanization activities</li> <li>5. Local manufacturing is expensive due to high cost of materials and low level of technology.</li> <li>6. Low cooperation of institutions in agricultural machinery</li> </ol>

## Annex 2: SWOC Matrices...

### SWOC Matrix for Supply Chain

Strengths	Weaknesses
1. Availability of agricultural machinery	1. Limited purchasing power
2. Government Intervention	2. Poor marketing strategies by dealers
3. Private Sector involvement	3. Scarcity of materials like Iron ore
4. Market availability	4. High cost of materials
5. Presence of manufacturers, Agro machinery importers, Service providers, and Training institutions	5. Limited access to financing
6. Availability of credit services	6. Limited technical skills and knowledge management of farm machineries
7. Tax exemption on agricultural machinery importation with some specification	7. Limited machine tools
8. Presence of political will on agricultural development	8. High competition of imports quality
9. Abundant Natural resource (presence of suitable land for agriculture)	9. Changes in Government policies
10. Availability of agricultural machinery centers	10. Environmental challenges
11. Innovation and technology adaption	11. Quality of imported machines
	12. Inadequate after-sales support
	13. Poor linkage between importers and farmers
	14. Shortage of supporting services in some areas
	15. Insufficient skilled personnel especially operators and mechanics
	16. Lack of agricultural act specifically on mechanization supply chain
	17. Inactivity of stakeholders platforms
	18. Poor accessibility of roads to farms
	19. Poor maintenance facilities

## Annex 2: SWOC Matrices...

Opportunities	Challenges
<ol style="list-style-type: none"> <li>1. Increasing demand for agricultural machinery</li> <li>2. Government support</li> <li>3. Innovation and technology adoption</li> <li>4. Import opportunities</li> <li>5. Farm machinery hiring services</li> <li>6. Supply for agricultural machinery and implements</li> <li>7. Availability of market for farmers</li> <li>8. Favorable agro-ecological zones</li> <li>9. Underutilized arable land</li> </ol>	<ol style="list-style-type: none"> <li>1. Limited access to financing</li> <li>2. Environmental challenges</li> <li>3. Quality of distributed machines</li> <li>4. Low farmer income</li> <li>5. Rapid change of technology</li> <li>6. Inflation of currency (Exchange rate)</li> <li>7. Existence of substandard agricultural machinery in the market</li> <li>8. Uncontrolled agricultural machinery prices (it is only based on demand and supply) because of lack subsidy</li> <li>9. Competition between locally and imported machines</li> <li>10. Appropriateness of farm technologies</li> <li>11. Limited number of well trained and certified operators</li> <li>12. Ingenuine spare parts</li> <li>13. Limited number of well-trained technicians</li> </ol>

## Annex 3: Strategic Objective Matrices

### Strategic Objective 1: Improve Availability and Accessibility of Agricultural Machinery, Technologies and Services

Specific Objective	Strategic Interventions	Actors	Performance/ Output Indicators	Target	Timeline	Means of Verification
1.1 Stimulate demand for agricultural machinery through promotions.	1.1.1 Sensitize farmers on the benefits of using agricultural machinery in their farming activities.	MoA, PO-RALG, Private Sector, Cooperative societies	Proportion of farmers using machines in agriculture	At least 54% increase of farmers use machines in agriculture	1-5 years	Quarterly report and annual report
	1.1.2 Promote the use of selected or adapted technologies whether locally manufactured or imported.	MoA, MIT, MLF, PO-RALG, Training and Research Institutions	No. of tested technologies whether locally manufactured or imported promoted	At least 2 technologies per year whether locally manufactured or imported tested	1-5 years	Quarterly report and annual report
	1.1.3 Strengthen access to mechanization information through the use of Information and Communication Technologies (ICTs).	MoA, PO-RALG, MLF	Proportion of farmers reached by mechanization information  No. of Tools/platforms developed	At least 60% of farmers accessed mechanization information  At least 2 Web/Mobile/SMS/ USSD platforms linked to extension officers per year	1-5 years	Quarterly report and annual report
	1.1.4 Promote the adoption of new emerging technologies such as Internet of Things (IoT) technology apps; Drone applications in Agriculture; Tracking systems; and Agricultural robotics for strategic crops.	MoA, PO-RALG, MIT, CAMARTEC, Training and Research Institutions	No. of new emerging technologies transferred  No. of new technologies piloted	At least 5 new technologies transferred  At least 5 new technologies e.g., IoT soil sensors in few regions piloted	1-5 years	Quarterly report and annual report
	1.1.5 Enhance easy access to mechanization inputs through adapted targeted subsidies and extension services.	MoA, MoF, PO-RALG, Private Sector, Training and Research Institutions	% of hectares cultivated using DAP  % of hectares cultivated using tractor	At least 21% of agricultural land cultivated using DAP  At least 43% of agricultural land cultivated using tractor	1-5 years	Quarterly report and annual report

## Annex 3: Strategic Objective Matrices...

Specific Objective	Strategic Interventions	Actors	Performance/ Output Indicators	Target	Timeline	Means of Verification
1.2. Enhance Public and Private Sectors engagement in delivering mechanization services.	1.2.1. Strengthen and establish new Agricultural Mechanization Centres.	MoA, Private Sector, TCDC, TFC	No. of Agricultural Mechanization centres established	At least 200 Agricultural Mechanization centres established	1-5 years	Quarterly report and annual report
	1.2.2. Facilitate inter-region mechanization services within the country and cross border.	URT (MoA, MoFAEC)	% of mechanization services programs on cross-border and between regions	At least 20% of mechanization services cross-border and inter-regions	1-5 years	Quarterly report and annual report
	1.2.3 Facilitate establishment and growth of primary and secondary Agro-mechanization industries.	MoA, Private Sector	% of primary and secondary agroprocessing industries established	At least 15% of primary agroprocessing industries established At least 15% of secondary agroprocessing industries established	1-5 years	Quarterly report and annual report
	1.2.4 Support and link farmers, cooperative societies, farmers groups and local agriculture machinery manufacturers with financial institutions and other development partners for improving access to appropriate mechanization.	MoA, MoF, PO-RALG, TCDC, and Private Sector	No. of farmers groups, farmers, local agriculture machinery manufacturers linked with financial institutions	At least 1000 of farmers groups linked with financial institutions, 700 of farmers linked with financial institutions and 300 of local agriculture machinery manufacturers linked with financial institutions	1-5 years	Quarterly report and annual report

## Annex 3: Strategic Objective Matrices...

Specific Objective	Strategic Interventions	Actors	Performance/ Output Indicators	Target	Timeline	Means of Verification
1.3 Strengthen the capacity of various actors along the Agricultural Mechanization value chain.	1.3.1 Enhance supportive infrastructures for Agricultural Mechanization (e.g. investment in rural infrastructure).	MoA, Ministry of Works	No. of Mechanization centres with minimum required infrastructures	At least 200 Mechanization centres with minimum required infrastructures	1-5 years	Quarterly report and annual report
	1.3.2 Facilitate and support agricultural machinery service providers to participate in Agricultural Mechanization platforms at all levels.	MoA, Universities, Private Sector, Research Institutions, PO-RALG	% of agricultural machinery service providers participated	At least 80% participated national platforms and 20% participated in international platforms	1-5 years	Quarterly report and annual report
	1.3.3 Facilitate tailor-made and short-course training to various sector players.	MoA, Universities, Research Institutions, VETA	Proportion of participants trained	At least 50% of Private Sector players trained	1-5 years	

## Annex 3: Strategic Objective Matrices...

### Strategic objective 2: Improve Manufacturing, Commercialization, Maintenance of Machinery and Increasing Financing in Agricultural Mechanization.

Specific Objective	Strategic Interventions	Actors	Performance/ Output Indicators	Target	Timeline	Means of Verification
2.1 Improve local manufacturing of agricultural machinery and equipment through innovation, technology transfer and commercialization.	2.1.1 Promote the manufacturing of agricultural machinery and equipment along the agricultural value chain.	MIT; SIDO; CAMARTEC; TIRDO;  TEMDO; TANTRADE; MoA;  COSTECH; and Private Sector; and Academic Institutions	No. of labour-saving technologies manufactured and commercialized.	At least 10 agricultural technologies along the value chain manufactured and commercialized.	1-5 years	Assessment report.
	2.1.2 Improve the quality and durability of locally manufactured agricultural machinery to comply with the specified standards.	MIT; SIDO; CAMARTEC;  TEMDO; TANTRADE; TBS; MoA; COSTECH; Private Sector and Academic Institutions	No. of machines certified.	At least 35 machines certified	1-5 years	Test report and certificate of performance.
	2.1.3 Encourage Public Private Partnership (PPP) to boost agricultural machinery distribution and sales network across the country.	MoA; Private Sector; MIT; TIC; MoF; POPI	No. of active distribution and sale centers established	At least 3 distribution and sale centers per agro ecological zone.	1-5 years	Assessment report
	2.1.4 Facilitate technology transfer and innovation by establishing a partnership between local and international manufacturers/research institutions.	MIT; SIDO; CAMARTEC;  TEMDO; TANTRADE; MoA;  COSTECH; and Private Sector; TARI; TIRDO; and Academic Institutions	No. of local technologies and innovations transferred	At least 20 technologies and innovations transferred	1-5 years	Quarterly report and annual report
	2.1.5 Capacitate the local manufacturers with technical and business management skills.	SIDO; CAMARTEC;  TEMDO; TANTRADE; MoA; TARI; Private Sector; and Academic Institutions	No. of local manufacturers capacitated	At least 150 local manufacturers capacitated	1-5 years	Quarterly report and annual report
	2.1.6 Promote local manufacturing of spare parts for commonly used agricultural machinery and implements.	MIT; KMTC (NDC); SIDO; and Private Sector	No. of local manufacturers supported on spare parts manufacturing	At least 20 local manufacturers supported on spare parts manufacturing.	1-5 years	Quarterly report and annual report
2.2 Strengthen maintenance services and after-sales support to the agro-machinery dealers and local mechanics in the seven agroecological zones.	2.2.1 Improve a network of certified maintenance centres to provide reliable repair and maintenance services of agricultural machinery and equipment.	SIDO; CAMARTEC;  TEMDO; TANTRADE; MoA; VETA; and Private Sector	No. of connected certified maintenance centres	At least 3 certified maintenance centres connected in each agro-ecological zone.	1-5 years	Assessment report
	2.2.2 Provide on job training on operation and maintenance skills.	CAMARTEC; VETA; TEMDO; SIDO; MoA; Agro – Dealers; and Academic Institutions	No. of trainees attended on job training on operation and maintenance skills	At least 10,000 trainees attended on job training on operation and maintenance skills	1-5 years	Training report/ annual report
	2.2.3 Capacitate local workshops with advanced maintenance technology.	CAMARTEC; VETA; TEMDO; SIDO; MoA; and Private Sector	No. of workshops capacitated	At least 20 workshops capacitated	1-5 years	Assessment report

## Annex 3: Strategic Objective Matrices...

Specific Objective	Strategic Interventions	Actors	Performance/ Output Indicators	Target	Timeline	Means of Verification
2.3 Increase financing and investment in mechanization	2.3.1 Facilitate farmers enterprises and organizations to acquire credits and loans along the Agricultural Mechanization value chain.	MoA; SIDO; AGITF; Private Sector; TCDC; and Financial Institutions	No. of farmers enterprises and organizations benefited	At least 1200 farmers enterprises and organizations benefited	1-5 years	Quarterly report and annual report
	2.3.2 Strengthen engagement of Public Private Partnership (PPP) investment in Agricultural Mechanization value chain.	MoA; Private Sector; TPSF; and MoF	No. of Public and Private Sector entities engaged	At least 50 Public and Private Sector entities engaged.	1-5 years	MoU signed
	2.3.4 Empower small scale farmers, women and youths in Agricultural Mechanization through the provision of credits, loans and lease.	MoA; SIDO; Private Sector; AGITF; TCDC; and PO-LARG.	No. of small-scale farmers supported	At least 100,000 small-scale farmers including youth and women supported.	1-5 years	Quarterly report and annual report
	2.3.5 Provide an enabling environment to the Public and Private Sectors to introduce agro-processing and value addition industries.	MoA; MLHSD; MoE; NFRA; MIT; CPB; CO-PRA; CROP BOARDS; and PO-RALG.	% of agro-processing and value addition industries supported.	At least 10 % of agro-processing and value addition industries supported.	1-5 years	Assessment report

### Strategic objective 3: Promote Climate Smart Agriculture Technologies and Practices

Specific Objective	Strategic Interventions	Actors	Performance/ Output indicator	Target	Timeline	Means of Verification
3.1 Increase the use of CSA technologies that contribute to the rural population's sustainable livelihoods	3.1.1 Conduct CSA awareness campaigns using media and stakeholder forums	MoA, Private Sector, PO-RALG, Media	% of farmers practising CA  No. of stakeholder forums conducted.	At least 20% of farmers (1M) practising CA  At least one stakeholder forum per year.	1-5 years	Quarterly report and annual report
	3.1.2 Organize workshops and field demonstrations on CSA technologies.	MoA, Private Sector, PO-RALG, Media	No. of workshop sessions organized  No. of field demonstrations showcasing CA technologies	At least 35 workshop sessions organized  At least 200 field demonstrations showcasing CA technologies organized	1-5 years	Quarterly report and annual report
	3.1.3 Leverage community-based initiatives and cooperatives to spread CSA technologies.	MoA, PO-RALG, and Private Sector	No. of CA stakeholders engaged in Tanzania conservation Agriculture task force	At least 50 CA stakeholders engaged	1-5 years	Quarterly report and annual report

## Annex 3: Strategic Objective Matrices...

Specific Objective	Strategic Interventions	Actors	Performance/ Output indicator	Target	Timeline	Means of Verification
3.2 Strengthen capacity of CSA extension/advisory workers	3.2.1 Update and coordinate on training curriculum for short and long-term courses on CSA.	MoA, PO-RALG, MoE NGO's and Private Sector	No. of curricula for different stakeholders updated/	At least 3 curricula updated/ developed	1-2 Years	Annual Report and Approved Curricular
	3.2.2 Conduct specialized training sessions to enhance knowledge on CSA technologies for extension workers and service providers.	MoA, PO-RALG, MoE NGO's and Private Sector	No. of courses conducted and number of extension workers and service providers trained	At least 7000 extension workers and 5000 service providers are trained	1-5 years	Annual reports
	3.2.3 Training and certification of CA mechanization service providers.	MoA, MoE, MoI	No. of service provider trained and certified	At least 5000 service providers (5 per centre) are trained and certified	1 – 5 Years	Annual reports

## Annex 3: Strategic Objective Matrices...

Specific Objective	Strategic Interventions	Actors	Performance/ Output indicator	Target	Timeline	Means of Verification
3.3 Create the enabling environment for scaling adoption of CSA technologies and practices	3.3.1 Disseminate and implement soil conservation policies and guidelines at all levels (local authorities to national level).	MoA, PO-RALG, and NGO's	No. of policies and guidelines disseminated and implemented	At least 2 policies and 1 guideline disseminated and implemented	1-5 years	Quarterly report and annual report
	3.3.2 Pilot and scale appropriate climate smart agricultural practices.	MoA, Private Sector, Media, Research Institutions	No. of hectares under CA	At least 1M hectares under CA	1-5 years	Quarterly report and annual report
	3.3.3 Provide incentive for scaling CSA technologies including targeted subsidies on CA machinery.	MoA, PO-RALG, NGO's and Private Sector	No. of mechanization centres established  % of targeted subsidy (up to 60%) for mechanization services  % of subsidized interest rate (less than 7%) implemented	At least 1000 mechanization centres established  At least 50 % of farmers receive subsidy  At least 50 % of stakeholders receive subsidized interest rate	1-5 years	Quarterly and annual reports

## Annex 3: Strategic Objective Matrices...

### Strategic Objective 4: Improve Research and Development, Training and Extension in Agricultural Mechanization

Specific Objective	Strategic Interventions	Actors	Performance/ Output indicator	Target	Timeframe	Means of Verification
4.1 Strengthen Research and Development (R&D) in Agricultural Mechanization	4.1.1 Increase financial resources investment to support research activities related to Agricultural Mechanization.	MoA, Private Sector, Academic and Research Institutions	No. of researches financed	At least 200 researches financed	1-10 years	Annual report and Publication
	4.1.2 Conduct research on Agricultural Mechanization technologies appropriate to local farming conditions along the value chain.	MoA, Private Sector, Academic and Research Institutions	No. of researches conducted	At least 20 researches conducted	1-10 years	Signed MoU, Publication and annual report.
	4.1.3 Promote collaboration among research institutions, academic institutions and Private Sector to accelerate innovation and technology transfer.	MoA, Private Sector; Academic and Research Institutions	No. of technologies transferred	At least 20 technologies transferred	1-10 years	Quarterly report and annual report
	4.1.4 Enhance availability and sustainability of human resource in research institutions.	MoA, Private Sector; CAMARTEC; TBS; MIT	No. of professionals employed	At least 300 professionals employed	1-10 years	Quarterly report and annual report,  Test report
	4.1.5 Strengthen collaboration in selection, development and testing processes of agricultural machinery to ensure safety, performance and suitability to local conditions.	MoA, Private Sector, Academic and Research Institutions, Farmers	No. and type of machines tested and suitable for local condition	At least 1,880 machines are suitable for local condition	1 – 10 years	Quarterly report and annual report
	4.1.6 Strengthen linkage among research institutions, extension agencies and farmers on dissemination of Agricultural Mechanization research findings.	MoA, Private Sector; CAMARTEC; TBS, SIDO, TEMDO Academic Institution.	No. of farmers trained based on research findings	At least 10,000 farmers trained based on research findings	1-10 years	Quarterly report and annual report

## Annex 3: Strategic Objective Matrices...

Specific Objective	Strategic Interventions	Actors	Performance/ Output indicator	Target	Timeframe	Means of Verification
4.2 Strengthen training in Agricultural Mechanization	4.2.1 Enhance training programs for Agricultural Mechanization at all levels of education.	MoA, MoEST, Private Sector, Academic and Research Institutions	No. of qualified training professionals deployed	At least 300 training professionals deployed	1-10 years	Quarterly report and annual report  Assessment report
	4.2.2 Increase and capacitate training centres on Agricultural Mechanization to offer hands-on training and certification programs for engineers, technicians, operators and artisans.	MoA, Private Sector; VETA, Research Institutions	No. of training centres supported  No. of training centres established	At least 100 centres supported  At least 5 centres established	1-10 years	Quarterly report and annual report  Assessment report.
	4.2.3 Strengthen collaboration between the Public and Private Sector to provide Agricultural Mechanization training to farmers, technicians, artisans and service providers	MoA, Private Sector, Academic and Research Institutions	No. of farmers, technicians, artisans and service providers trained	At least 20,000 farmers; 2,000 technicians and 10,000 artisans	1-10 years	Quarterly report and annual report  Assessment report
	4.2.4 Promote the continuous professional development of trainers and educators in Agricultural Mechanization related fields to ensure they stay updated with the latest technologies.	MoA, Private Sector, Academic and Research Institutions	No. of trainers and educators trained	At least 50 trainers and 100 educators trained	1-10 years	Quarterly report and annual report
	4.2.5 Sensitize and build capacity to small and medium-scale agro processors.	MoA, Private Sector; MIT, SIDO; VETA	No. of agro-processors trained	At least 10,000 agro-processors trained	1-10 years	Quarterly report and annual report  Assessment report

## Annex 3: Strategic Objective Matrices...

Specific Objective	Strategic Interventions	Actors	Performance/ Output indicator	Target	Timeframe	Means of Verification
4.3 Strengthen Agricultural Mechanization extension services	4.3.1 Enhance capacity building to Subject Matter Specialists (SMS) in Agricultural Mechanization and extension officers to deliver knowledge and technical support to farmers.	MoA, Private Sector	No. of extension officers trained	At least 1,000 extension officers trained/year on apps/ drone operations	1-10 years	Quarterly report and annual report  Assessment report
	4.3.2 Facilitate Farmer Field Business Schools (FFBS) and demonstration plots to showcase the use of various agricultural machinery in different farming operations.	MoA, Private Sector; MLF; Research Institutions	No. of FFBS and demonstration conducted  No. of mechanization centres assessed	At least 200 FFBS and 2,500 demonstrations conducted  At least 100 mechanization centres assessed	1-10 years	Quarterly report and annual report  Assessment report
	4.3.3 Strengthen Public-private partnership to support mechanization extension services.	MoA, Private Sector; VETA	No. of Private Sector entities providing extension services	At least 100 Private Sector entities providing extension services	1-5 years	Quarterly report and annual report  Assessment report

### Strategic Objective 5: Improve Policy and Legal Frameworks

Specific Objective	Strategic Interventions	Actors	Performance/ Output Indicators	Target	Timeline	Means of Verification
5.1. Harmonize policies, acts, regulations and plans to attract investments in Agricultural Mechanization	5.1.1. Provide subsidies to farmers youth, women and men for Agricultural Mechanization services	MoA, PMO, MoLF, MIT, MoW, MNRT, VPO, MoF, POPI, PO-RALG, Private Sector	No. of farmers supported	At least 50,000 farmers per year supported	1-5 years	Quarterly report and annual report
	5.1.2. Strengthen policies, regulations, and plans that support Agricultural Mechanization, including tax exemptions	MoA, MoF, ML-HHSD	No. of policies, regulations, and plans strengthened	At least 10 policies, regulations, and plans strengthened	1-5 years	Quarterly report and annual report
	5.1.3. Develop a roadmap for attracting investments in Agricultural Mechanization	MoA	Proportion of new investments in Agricultural Mechanization	At least 50% of new investments in Agricultural Mechanization	1-5 year	Quarterly report and annual report
5.2. Strengthen legal compliance among stakeholders	5.2.1. Create awareness among stakeholders on policies, strategies, acts, and regulations that support Agricultural Mechanization	MoA, PMO, MoLF, MIT, MoW, MNRT, VPO, MoF, POPI, PO-RALG, Private Sector	No. of stakeholders practising policies, strategies, acts, and regulations that support Agricultural Mechanization	At least 200 stakeholders practising policies, strategies, acts, and regulations that support Agricultural Mechanization	1-5 years	Quarterly report and annual report

## Annex 4: Work plan

Specific Objective	Strategic Interventions	Actors	Performance/ Output Indicators	Target	Timeline	Means of Verification
	5.2.2. Develop guidelines and manuals on compliance requirements	MoA, PMO, MoLF, MIT, MoW, MNRT, VPO, MoF, POPI, PO-RALG, Private Sector	Proportion of stakeholders comply with the requirements	At least 50 % of the stakeholders comply with the requirements	1-5 years	Quarterly report and annual report
	5.2.3. Incorporate compliance modules into extension services and training programs for operators, mechanics and manufacturers	MoA, MoEST, MIT, MoC-DGWSG, MoLF	Proportion of operators, mechanics and manufacturers complying with the requirements	At least 50 % of operators, mechanics and manufacturers complying with the requirements	1-5 years	Quarterly report and annual report
5.3. Support monitoring, evaluation and learning on Agricultural Mechanization	5.3.1. Develop a systematic monitoring, evaluation and learning framework	MoA,	Framework developed	1 framework developed	1-5 years	Quarterly report and annual report
	5.3.2. Develop data collection and reporting system	MoA	Data collection and reporting system developed	1 data collection and reporting system developed	1-5 years	Quarterly report and annual report
	5.3.3. Build institutional capacity of the monitoring, evaluation and learning system	MoA	Institutional capacity of the monitoring, evaluation and learning system built	1 institutional capacity of the monitoring, evaluation and learning system built	1-5 years	Quarterly report and annual report

## Annex 5: Proposed Budget

S/N	Specific Objective	YEAR 1				YEAR 2				YEAR 3				YEAR 4				YEAR 5			
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
1.1	Stimulate demand for agricultural machinery through promotions.																				
1.2	Enhance Public and Private Sectors engagement in delivering mechanization services.																				
1.3	Strengthen the capacity of various actors along the Agricultural Mechanization value chain.																				
2.1	Improve local manufacturing of agricultural machinery and equipment through innovation, technology transfer and commercialization.																				
2.2	Strengthen maintenance services and after-sales support to the agro-machinery dealers and local mechanics in the seven agroecological zones.																				
2.3	Increase financing and investment in mechanization.																				
3.1	Increase the use of CSA technologies that contribute to the rural population's sustainable livelihoods.																				
3.2	Strengthen capacity of CSA extension/advisory workers.																				
3.3	Create the enabling environment for scaling adoption of CSA technologies and practices.																				
4.1	Strengthen Research and Development (R&D) in Agricultural Mechanization.																				
4.2	Strengthen training in Agricultural Mechanization.																				
4.3	Strengthen Agricultural Mechanization extension services.																				
5.1	Harmonize policies, acts, regulations and plans to attract investments in Agricultural Mechanization																				
5.2	Strengthen legal compliance among stakeholders.																				
5.3	Support monitoring, evaluation and learning on Agricultural Mechanization.																				

## Annex 5: Proposed Budget...

### Strategic Objective 1: Improve Availability and Accessibility of Agricultural Machinery, Technologies and Services

Specific Objective	Activities	BUDGET ("x 1000" Tshs)						TOTAL
		FY 1	FY 2	FY 3	FY 4	FY 5		
1.1. Stimulate demand for agricultural machinery through promotions.	1.1.1. Publicize on the benefits of using agricultural machinery in farming activities	11 156 250	-	5 906 250	2 625 000	2 187 500	21 875 000	
	1.1.2. Sensitize and Publicize on the use of selected or adapted technologies, whether locally manufactured or imported	1 326 000	-	702 000	312 000	260 000	2 600 000	
	1.1.3. Perform Publicity on access to mechanization information through the use of Information and Communication Technologies (ICTs)	2 550 000	-	1 350 000	600 000	500 000	5 000 000	
	1.1.4. Perform Publicity to attract adoption of new emerging technologies such as Internet of Things (IoT) technology apps; Drone applications in Agriculture; Tracking systems, and Agricultural robotics for strategic crops.	2 658 630	-	1 407 510	625 560	521 300	5 213 000	
	1.1.5. Enhance easy access to mechanization inputs through adapted targeted subsidies and extension services.	1 275 000	-	675 000	300 000	250 000	2 500 000	
1.2. Enhance Public and Private Sectors engagement in delivering mechanization services.	1.2.1. Strengthen and establish new Agricultural Mechanization Centres.	52 500 000	54 600 000	56 700 000	25 200 000	21 000 000	210 000 000	
	1.2.2. Facilitate inter region mechanization services within the country and cross border.	125 000	130 000	135 000	60 000	50 000	500 000	
	1.2.3. Facilitate establishment and growth of primary and secondary Agromechanization industries.	500 000	520 000	540 000	240 000	200 000	2 000 000	
	1.2.4. Support and link farmers, cooperative societies, farmers groups and local agriculture machinery manufacturers with financial institutions and other development partners for improving access to appropriate mechanization.	450 620	453 000	455 345	200 150	197 460	1 756 575	

## Annex 5: Proposed Budget...

Specific Objective	Activities	BUDGET (“x 1000” Tshs)					
		FY 1	FY 2	FY 3	FY 4	FY 5	TOTAL
1.3. Strengthen the capacity of various actors along the Agricultural Mechanization value chain.	1.3.1. Enhance supportive infrastructures for Agricultural Mechanization (e.g. investment in rural infrastructure)	682 500	709 800	737 100	327 600	273 000	2 730 000
	1.3.2. Facilitate and support agricultural machinery service providers to participate in Agricultural Mechanization platforms at all levels.	752 000	782 080	812 160	360 960	300 800	3 008 000
	1.3.3. Facilitate tailor-made and short course training to various sector players.	193 000	200 720	208 440	92 640	77 200	772 000
	MEL (2% of the total budget)	1 529 257.73	1 183 414.43	1 435 645.47	638 018.76	532 314.64	5 318 651.03
	Audit (1% of the total budget)	764 628.87	591 707.22	717 822.73	319 009.38	266 157.32	2 659 325.52
	<b>Total</b>	<b>76 462 886.60</b>	<b>59 170 721.65</b>	<b>71 782 273.20</b>	<b>31 900 938.14</b>	<b>26 615 731.96</b>	<b>265 932 551.55</b>

## Annex 5: Proposed Budget...

### Strategic Objective 2: Improve Manufacturing, Commercialization, Maintenance of Machinery and Increasing Financing in Agricultural Mechanization

Specific Objective	Activities	BUDGET ("x 1000" Tshs)					
		FY 1	FY 2	FY 3	FY 4	FY 5	TOTAL
2.1. Improve local manufacturing of agricultural machinery and equipment through innovation, technology transfer and commercialization	2.1.1. Promote the manufacturing of agricultural machinery and equipment along the agricultural value chain	-	3 000 000	1 000 000	1 000 000	-	5 000 000
	2.1.2. Improve the quality and durability of locally manufactured agricultural machinery to comply with the specified standards	-	10 000 000	5 000 000	5 000 000	-	20 000 000
	2.1.3. Encourage Public Private Partnership (PPP) to boost agricultural machinery distribution and sales networks across the country.	-	1 000 000	500 000	-	-	1 500 000
	2.1.4. Facilitate technology transfer and innovation by establishing a partnership between local and international manufacturers/ research institutions.	-	50 000 000	25 000 000	-	-	75 000 000
	2.1.5. Capacitate the local manufacturers with technical and business management skills.	-	50 300 000	25 150 000	50 000 000	-	125 450 000
	2.1.6. Promote local manufacturing of spare parts for commonly used agricultural machinery and implements.	-	2 500 000	-	-	-	2 500 000
2.2 Strengthen maintenance services and after-sales support to the agro-machinery dealers and local mechanics in the seven agroecological zones	2.2.1 Improve a network of certified maintenance centres to provide reliable repair and maintenance services of agricultural machinery and equipment	268 000	268 000	268 000	268 000	268 000	1 340 000
	2.2.2 Providing on job training on opera maintenance skills	308 580	308 580	308 580	308 580	308 580	1 542 900
	2.2.3 Capacitate local workshops with advanced maintenance technology	2 757 000	2 757 000	2 757 000	2 757 000	2 757 000	13 785 000

## Annex 5: Proposed Budget...

Specific Objective	Activities	BUDGET (“x 1000” Tshs)					
		FY 1	FY 2	FY 3	FY 4	FY 5	TOTAL
2.3 Increase financing and investment in mechanization	2.3.1 Facilitate farmers organizations to acquire credits and loans along the Agricultural Mechanization value chain.	123 120	123 120	123 120	123 120	123 120	615 600
	2.3.2 Strengthen engagement of Public Private Partnership (PPP) investment in Agricultural Mechanization value chain.	2 713 150	678 285	678 285	678 285	678 285	5 426 290
	2.3.3 Empower small scale farmers, women and youths in Agricultural Mechanization through the provision of credits, loans and lease.	4 584 500	4 584 500	4 584 500	4 584 500	4 584 500	22 922 500
	2.3.4 Provide an enabling environment to the Public and Private Sectors to introduce agro-processing and value addition industries.	2 713 150	678 285	678 285	678 285	678 285	5 426 290
	MEL (2% of the total budget)	277 680.41	2 602 015.87	1 361 809.69	1 348 407.63	193 768.45	5 783 682.06
	Audit (1% of the total budget)	138 840.21	1 301 007.94	680 904.85	674 203.81	96 884.23	2 891 841.03
	<b>Total</b>	<b>13 884 020.62</b>	<b>130 100 793.81</b>	<b>68 090 484.54</b>	<b>67 420 381.44</b>	<b>9 688 422.68</b>	<b>289 184 103.09</b>

## Annex 5: Proposed Budget...

### Strategic Objective 3: Promote Climate Smart Agriculture Technologies and Practices

Specific Objective	Activities	BUDGET ("x 1000" Tshs)					
		FY 1	FY 2	FY 3	FY 4	FY 5	TOTAL
3.1. Increase the use of CSA technologies that contribute to the rural population's sustainable livelihoods	3.1.1 Conduct CSA awareness campaigns using media and stakeholder forums	390 000	390 000	390 000	390 000	390 000	1 950 000
	3.1.2 Organize workshops and field demonstrations on CSA technologies.	3 266 250	7 528 750	0	0	0	10 795 000
	3.1.3 Leverage community-based initiatives and cooperatives to spread CSA technologies.	5 360 000	5 360 000	5 360 000	5 360 000	0	21 440 000
3.2 Strengthen capacity of CSA extension/advisory workers	3.2.1 Update and coordinate on training curriculum for short- and long-term courses on CSA.	200 000	194 000	0	0	0	394 000
	3.2.2 Conduct specialized training sessions to enhance knowledge on CSA technologies for extension workers and service providers	1 014 000	4 773 600	0	780 000	0	6 567 600
	3.2.3 Training and certification of CA mechanization service providers	190 000	200 500	208 440	92 600	77 200	768 740
3.3 Create the enabling environment for scaling adoption of CSA technologies and practices.	3.3.1 Disseminate and implement soil conservation policies and guidelines at all levels (local authorities to national level).	0	194 000	0	0	0	194 000
	3.3.2 Pilot and scale appropriate climate smart agricultural practices	3 744 000	8 006 500	0	0	0	11 750 500
	3.3.3 Provide investment and incentive for scaling CSA technologies including targeted subsidize on CA machinery	4 500 000	6 000 000	0	100 000	0	10 600 000
	MEL (2% of the total budget)	384 829.9	673 141.24	122 854.43	138 610.31	9 632.99	1 329 068.67
	Audit (1% of the total budget)	192 414.95	336 570.62	61 427.22	69 305.15	4 816.49	664 534.33
	<b>Total</b>	<b>19 241 494.85</b>	<b>33 657 061.86</b>	<b>6 142 721.65</b>	<b>6 930 515.46</b>	<b>481 649.48</b>	<b>66 453 443.30</b>

## Annex 5: Proposed Budget...

### Strategic Objective 4: Improve Research and Development, Training, Extension and Legal Frameworks dealing with Agricultural Mechanization

Specific Objective	Activities	BUDGET ("x 1000" Tshs)					
		FY 1	FY 2	FY 3	FY 4	FY 5	TOTAL
4.1 Strengthen Research and Development (R&D) in Agricultural Mechanization	4.1.1 Increase financial resources investment to support research activities related to Agricultural Mechanization	1 100 000	950 000	850 000	850 000	850 000	4 600 000
	4.1.2 Conduct research on Agricultural Mechanization technologies appropriate to local farming conditions along the value chain.	3 400 000	3 400 000	2 450 000	2 350 000	1 400 000	13 000 000
	4.1.3 Promote collaboration among research institutions, academic institutions and Private Sector to accelerate innovation and technology transfer.	1 750 000	1 500 000	4 000 000	1 250 000	1 250 000	9 750 000
	4.1.4 Enhance availability and sustainability of human resource in research institutions.	1 950 000	1 850 000	1 900 000	1 800 000	1 750 000	9 250 000
	4.1.5 Strengthen collaboration in selection, development and testing processes of agricultural machinery to ensure safety, performance, and suitability to local conditions.	1 000 000	1 000 000	750 000	500 000	400 000	3 650 000
	4.1.6 Strengthen linkage among research institutions, extension agencies, and farmers on dissemination of Agricultural Mechanization research findings	1 500 000	1 400 000	900 000	900 000	900 000	5 600 000

## Annex 5: Proposed Budget...

Specific Objective	Activities	BUDGET ("x 1000" Tshs)					
		FY 1	FY 2	FY 3	FY 4	FY 5	TOTAL
4.2 Strengthen training in Agricultural Mechanization	4.2.1 Enhance training programs for Agricultural Mechanization at all levels of education.	4 500 000	4 350 000	-	550 000	500 000	9 900 000
	4.2.2 Increase and capacitate training centres on Agricultural Mechanization to offer hands-on training and certification programs for engineers, technicians, operators and artisans.	5 000 000	3 500 000	-	2 500 000	2 250 000	13 250 000
	4.2.3 Strengthen collaboration between the Public and Private Sector to provide Agricultural Mechanization training to farmers, technicians, artisans and service providers	1 000 000	900 000	-	7 250 000	7 250 000	16 400 000
	4.2.4 Promote the continuous professional development of trainers and educators in Agricultural Mechanization related fields to ensure they stay updated with the latest technologies.	1 000 000	1 750 000	-	950 000	900 000	4 600 000
	4.2.5 Sensitize and build capacity to small and medium-scale agro processors.	1 500 000	2 750 000	-	1 250 000	1 500 000	7 000 000
	4.2.6 Enhance training programs for Agricultural Mechanization at all levels of education.	1 500 000	1 200 000	900 000	950 000	900 000	5 450 000

## Annex 5: Proposed Budget...

Specific Objective	Activities	BUDGET ("x 1000" Tshs)					
		FY 1	FY 2	FY 3	FY 4	FY 5	TOTAL
4.3 Strengthen Agricultural Mechanization extension services	4.3.1 Enhance capacity building to Subject Matter Specialists (SMS) in Agricultural Mechanization and extension officers to deliver knowledge and technical support to farmers.	1 000 000	1 000 000	-	1 250 000	500 000	3 750 000
	4.3.2 Facilitate Farmer Field Business Schools (FFBS) and demonstration plots to showcase the use of various agricultural machinery in different farming operations.	6 550 000	4 200 000	-	5 000 000	4 550 000	20 300 000
	4.3.3 Strengthen Public-private partnership to support mechanization extension services.	1 000 000	1 000 000	-	1 250 000	900 000	4 150 000
	MEL (2% of the total budget)	695 876.29	634 020.62	242 268.04	589 690.72	531 958.76	2 693 814.43
	Audit (1% of the total budget)	347 938.14	317 010.31	121 134.02	294 845.36	265 979.38	1 346 907.22
	<b>Total</b>	<b>34 793 814.43</b>	<b>31 701 030.93</b>	<b>12 113 402.06</b>	<b>29 484 536.08</b>	<b>26 597 938.14</b>	<b>134 690 721.65</b>

## Annex 5: Proposed Budget...

### Strategic Objective 5: Improve Policy and Legal Frameworks

Specific Objective	Activities	BUDGET ("x 1000" Tshs)					
		FY 1	FY 2	FY 3	FY 4	FY 5	TOTAL
5.1 Harmonize policies, acts, regulations and plans to attract investments in Agricultural Mechanization	5.1.1 Provide subsidies to farmers youth, women and men for Agricultural Mechanization services	11 156 250	-	5 906 250	2 625 000	2 187 500	21 875 000
	5.1.2 Strengthen policies, regulations, and plans that support Agricultural Mechanization, including tax exemptions	1 326 000	-	702 000	312 000	260 000	2 600 000
	5.1.3 Develop a roadmap for attracting investments in Agricultural Mechanization	2 550 000	-	1 350 000	600 000	500 000	5 000 000
5.2 Strengthen legal compliance among stakeholders	5.2.1 Create awareness among stakeholders on policies, strategies, acts, and regulations that support Agricultural Mechanization	2 550 000	-	1 350 000	600 000	500 000	5 000 000
	5.2.2 Develop guidelines and manuals on compliance requirements	125 000	130 000	135 000	60 000	50 000	500 000
	5.2.3 Incorporate compliance modules into extension services and training programs for operators, mechanics and manufacturers	500 000	520 000	540 000	240 000	200 000	2 000 000
5.3 Support monitoring, evaluation and learning on Agricultural Mechanization	5.3.1 Develop a systematic monitoring, evaluation and learning framework	682 500	709 800	737 100	327 600	273 000	2 730 000
	5.3.2 Develop data collection and reporting system	752 000	782 080	812 160	360 960	300 800	3 008 000
	5.3.3 Build institutional capacity of the monitoring, evaluation and learning system	193 000	200 720	208 440	92 640	77 200	772 000
	MEL (2% of the total budget)	408 963.92	48 301.03	242 081.44	107 591.75	89 659.79	896 597.94
	Audit (1% of the total budget)	204 481.96	24 150.52	121 040.72	53 795.88	44 829.90	448 298.97
	<b>Total</b>	<b>20 448 195.88</b>	<b>2 415 051.55</b>	<b>12 104 072.16</b>	<b>5 379 587.63</b>	<b>4 482 989.69</b>	<b>44 829 896.91</b>

## Annex 6: Quarterly Progress Report Format

Reporting Department / Unit / Actor:

Period – From: ..... To .....

Strategic Area	Specific Objective	Strategic intervention / Activity	Planned target(s)	Performance indicator	Implementation status		Planned budget	Actual expenditure	Challenges encountered	Remedial measures
					Achievements based on target	Achievement in %				

## Annex 7: Quarterly Progress Report Format – Financial Report

Reporting Department / Unit / Actor:

Period – From: ..... To .....

Strategic Area	Specific Objective	Strategic intervention / Activity	Planned Budget	Disbursed fund	Actual Expenditure	Achievement	% Achievement	Remarks

## Annex 8: Financial Performance report

### Estimations and Actual Collection for the Financial year 20.....

Financial Performance Report as at: .....

S/No	Source of fund	Contribution Estimates (CE)	Actual contribution (AC)	Difference between the CE and AC	Percentage of contribution	Remarks
1	Government					
2	Development Partners					
3	Private Sector					





**Prepared by:**  
Permanent Secretary,  
Ministry of Agriculture,  
P.O. Box 2182,  
Government - Mtumba  
DODOMA.