



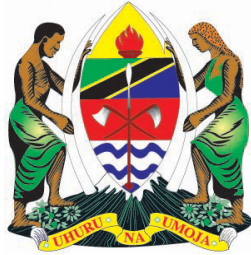
The United Republic of Tanzania,
Ministry of Agriculture



Postharvest Management Strategy
Implementation Plan

2019-2024





THE UNITED REPUBLIC OF TANZANIA
MINISTRY OF AGRICULTURE

POST-HARVEST MANAGEMENT STRATEGY
IMPLEMENTATION PLAN-SIP
2019 - 2024

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LIST OF ABBREVIATIONS AND ACRONYMS

ACT	Agricultural Council of Tanzania
AfDB	African Development Bank
AGRA	Alliance for a Green Revolution in Africa
AMCOS	Agricultural Marketing Co-operative Societies
AMDT	Agricultural Markets Development Trust
ANSAF	Agricultural Non-State Actors Forum
ASDS	Agriculture Sector Development Strategy
ASDP	Agricultural Sector Development Programme
ASLMs	Agriculture Sector Lead Ministries
BAKITA	Baraza la Kiswahili Tanzania
BMGF	Bill and Melinda Gates Foundation
CARMATEC	Centre for Agricultural Mechanization and Rural Technology
CMT	Coordination and Management Team
COPRA	Cereal and Other Produce Regulatory Authority
COSTECH	Tanzania Commission for Science and Technology
CPB	Cereals and Other Produce Board
EAGC	Eastern Africa Grain Council
ESRF	Economic and Social Research Foundation
EU	European Union
FAO	Food and Agriculture Organisation
FSDT	Financial Sector Deepening Trust
JICA	Japan International Cooperation Agency
MIT	Ministry of Industry and Trade
MoA	Ministry of Agriculture
MoFP	Ministry of Finance and Planning
MoHCDEC	Ministry of Health, Community Development, Gender, Elderly, and Children
MVIWATA	Mtandao wa Vikundi vya Wakulima Tanzania
MWTC	Ministry of Works, Transport and Communications
NBS	National Bureau of Standards
NFRA	National Food Reserve Agency
NFRA	Tanzania's National Food Reserve Agency
NM-AIST	Nelson Mandela African Institution of Science and Technology
NPHMS	National Post-harvest Management Strategy
PACA	Partnership for Aflatoxin Control in Africa
PASS	Private Agricultural Sector Support

PHM	Post-Harvest Management
PHTs	Post-Harvest Technologies
PMO	Prime Minister Office
PO-RALG	President's Office- Regional Administration and Local Government
REA	Rural Energy Agency
REPOA	Research on Poverty Alleviation
RUDI	Rural Urban Development Initiatives
SACCOS	Savings and Credit Co-operative Society
SAGCOT	Southern Agricultural Growth Corridor of Tanzania.
SIDO	Small Industries Development Organisation, Tanzania
SIP	Strategy Implementation Plan
SUA	Sokoine University of Agriculture
TADB	Tanzania Agricultural Development Bank
TAHA	Tanzania Horticultural Association
TAMFI	Tanzania Association of Microfinance Institutions
TANTRADE	Tanzania Trade Development Authority
TARI	Tanzania Agricultural Research Institute
TARURA	Tanzania Rural & Urban Roads Agency
TBS	Tanzania Bureau of Standards
TCAA	Tanzania Civil Aviation Authority
TEMDO	Tanzania Engineering and Manufacturing Design Organisation
TFDA	Tanzania Food and Drugs Authority
TIB	Tanzania Investment Bank
TIC	Tanzania Investment Centre
TIRDO	Tanzania Industrial Research and Development Organization
TMA	Tanzania Meteorological Agency
TPRI	Tropical Pesticides Research Institute
TPSF	Tanzania Private Sector Foundation
TWGs	Thematic Working Groups
UDOM	University of Dodoma
UDSM	University of Dar es Salaam:
USAID	United States Agency for International Development
VETA	Vocational Educational and Training Authority
VICOBA	Village Community Banks
WRRB	Warehouse Receipts Regulatory Board

1. INTRODUCTION

1.1. Background

The National Agriculture Policy (2013) acknowledges that, among the key challenges in the agriculture sector, is the high pre- and post-harvest losses, which makes up to 30-40 percent of the total annual crop production. The largest magnitude of losses occurs in fruits, vegetables, root and tuber crops, because of the perishability of these commodities, poor post-harvest infrastructures and handling practices. Post-harvest loss affects household's food security and erodes profit by reducing marketable volumes for actors. The advantages of increased production and productivity cannot be achieved if the actors do not have the capacity to abate the high post-harvest losses. Mitigating PHL represents an opportunity to improve food security, increased income, better health and a sustainable environment. In order to reduce the post-harvest losses for food crops, the country has been implementing the National Agriculture Policy (2013) and Agricultural Marketing Policy (2008) through the Agriculture Sector Development Programme I (ASDP I), which is dedicated to strategize the implementation of the policy's stated problems, including management of post-harvest losses.

1.2. Scope of the strategy

National Post-Harvest Management Strategy (NPHMS) will be implemented over a ten-year (2018-2027) period focusing on food crops particularly cereals, legumes, fruits and vegetables, roots and tubers and edible oil crops. The strategy does not include traditional cash crops, livestock and livestock products. Furthermore, it covers post-harvest losses and actors along the value chain from harvesting to consumption. However, the strategy will be implemented under two phases of five years each.

1.3. Vision of the NPHMS

Reduced post-harvest losses along the commodity value chains, which adequately rewards the actors and sufficiently contributes to national food and nutrition security and the economy.

1.4. Mission of the NPHMS

To improve PHM by ensuring availability of appropriate post-harvest and value-addition practices and technologies, providing incentives for investment in marketing systems, as well as improving capacities and coordination of strategic interventions

1.5. Strategic Objectives of the NPHMS

- i. Facilitate awareness on Post-Harvest Management to improve efficiency and reduce crop losses along the value chain
- ii. Promote availability, accessibility, affordability and adoption of tested technologies and processes to reduce post-harvest losses
- iii. Facilitate agricultural marketing systems to improve market access and minimize post-harvest losses
- iv. Promote research and innovations of new and appropriate technologies and methods to reduce crop losses
- v. Review and put in place new legislations to ensure compliance with standards and adoption of practices to minimize PHL.
- vi. Strengthen institutional capacity, coordination, partnerships and stakeholders' participation of PHM actors to enhance implementation of strategic interventions
- vii. Adapt post-harvest management systems to mitigate the effects of climate change
- viii. Addressing inadequacy in PHM financing
- ix. Develop a standard methodology for collecting data and estimating Post-Harvest Losses in a country

2. INSTITUTIONAL ARRANGEMENT

The National Post-Harvest Management Strategy is holistic and requires the participation of different stakeholders including the Government, Private Sector, Civil Society Organizations, CBOs, and Development Partners, in order to achieve all of its strategic objectives and the overall vision. The roles and expected interface among these actors are outlined subsequently.

Since NPHMS is an integral part of the ASDP II, its implementation will be through the ASDP II National Steering Committee. In order for MoA to provide leadership on behalf of the Government, there will be quarterly Coordination and Management Team (CMT) meetings which will be chaired by PS MoA and with selected members drawn from MDAs, Academia, Research and Development Institutions, Development Partners, Non-State Actors (Private sector, NGOs (international and local), CSOs and CBOs) engaged in post-harvest matters. In the similar spirit, the secretariat for NPHMS will be the DNFS under MoA and the section responsible for coordinating the strategy will be the Post-harvest Management Section. In performing this function, MoA will be assisted by Regional Secretariats and Local Government Authorities through PHM focal persons in RS and LGAs. Moreover, there will be Thematic Working Groups (PHM -TWGs) to work on specific matters and advice the MoA accordingly as well as PHM stakeholder's platform, which will involve all stakeholders in PHM.

The diagram below shows the institutional arrangement for the NPHMS implementation

The key institutions and their responsibilities in implementing the NPHMS are summarized in Table 1 below

Diagram for the NPHMS implementation

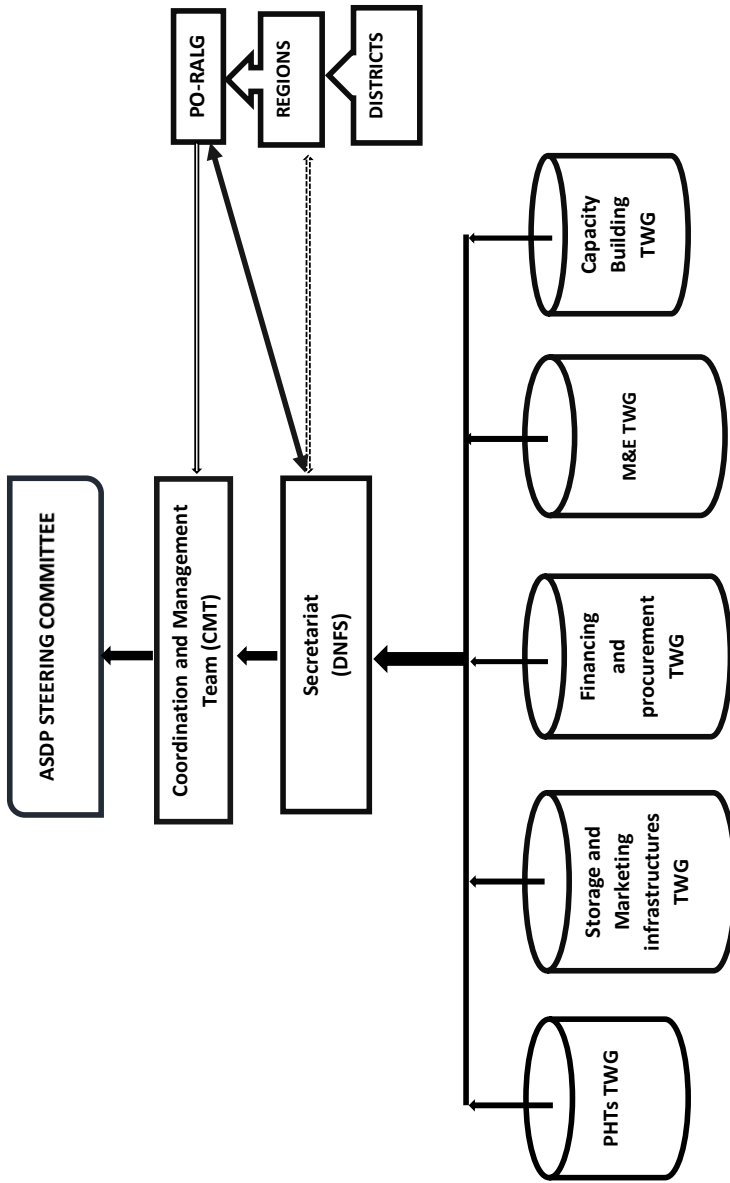


Table 1: Key Institutions and their functions in NPHMS implementation

Category	Institutions	Key responsibilities and functions
ASLMs	Ministry of Agriculture (MoA)	<ul style="list-style-type: none"> ■ This is the lead sector Ministry ■ Overall coordination of the strategy implementation ■ To chair PHM decisions forum ■ Lead resources mobilization and budgeting ■ Formation and operationalization of thematic groups ■ To coordinate PHM stakeholders ■ To take and maintain stock of PHM actors
	Ministry of Industry and Trade (MIT)	<ul style="list-style-type: none"> ■ Facilitate regional and international trade ■ Lead the marketing of the agricultural commodities
	President's Office- Regional Administration and Local Government (PO-RALG)	<ul style="list-style-type: none"> ■ Coordinate implementation of the PHM interventions at regional and district levels. ■ Facilitate coordination of key players at regional and district levels through RAS, DED and focal person respectively
	Ministry of Finance and Planning (MoFP)	<ul style="list-style-type: none"> ■ To allocate sufficient budget to support PHM specific interventions ■ To incorporate the PHM component in the budget guidelines
	Ministry of Healthy, Community Development, Gender, Elderly and Children -MoHCDEC	<ul style="list-style-type: none"> ■ To coordinate nutrition and food safety
	Prime Minister Office (PMO)	<ul style="list-style-type: none"> ■ To spearhead the engagement of youth in PHM specific interventions ■ Promote investment opportunities for postharvest technologies and agro-processing

Category	Institutions	Key responsibilities and functions
Technology Developers	TIRDO	<ul style="list-style-type: none"> ■ Providing technical expertise and support services to PHM industries to upgrade their technology base ■ Conduct specific R&D in postharvest technologies, and agro processing-innovations
	TEMDO	<ul style="list-style-type: none"> ■ Design, adapt and develop machinery and equipment, and to promote their commercial manufacture and use. ■ Transferring/disseminate technology to manufacturing small and medium-sized enterprises (SMEs), ■ Offer consulting services and training to industries.
	SIDO	<ul style="list-style-type: none"> ■ Spearhead establishment and strengthening of the PHM small industry sector through technology transfer
	CARMATEC	<ul style="list-style-type: none"> ■ To develop and disseminate improved technologies for PHM
	VETA	<ul style="list-style-type: none"> ■ Coordinating, regulating, financing, Promoting and providing vocational education and training on PHTs
Regulatory authorities and agencies	The Weights and Measures Agency	<ul style="list-style-type: none"> ■ Enforce laws and regulations related to weight and measures
	Warehouse Licensing Board	<ul style="list-style-type: none"> ■ To register and ensure compliance of quality standards for warehouses.
	TFDA	<ul style="list-style-type: none"> ■ To enforce compliance of food safety regulation for crops produce
	TBS	<ul style="list-style-type: none"> ■ To develop standard specific for food produce.
	REA	<ul style="list-style-type: none"> ■ To ensure the availability of electrical energy in the rural areas to support agro processing
	NBS	<ul style="list-style-type: none"> ■ Ensure incorporation of PHM indicators in national research, surveys and census ■ Oversee and participate in baseline survey and census on PHM

Category	Institutions	Key responsibilities and functions
	NFRA	<ul style="list-style-type: none"> ■ Ensure availability of storage technologies ■ Procuring, reserving and recycling grain stocks
	CPB	<ul style="list-style-type: none"> ■ Facilitate the creation of new and potential market niches ■ Facilitate capacity building on PHTs ■ Promote value addition of food crops
	COPRA	<ul style="list-style-type: none"> ■ Regulate the marketing of cereal and other produce include export and importation
	COSTECH	<ul style="list-style-type: none"> ■ Consult, coordinate and supervise the determination, planning, and allocation of funds by national research institutions to PHM R&D projects and programmes within their respective field
	TARI	<ul style="list-style-type: none"> ■ Conducting, regulating, promoting and coordinating PHM research activities
Academic and Research Institutions	These institutions include MATIs, TIRDO, CAMARTECT, TEMDO, ESRF, Universities like SUA, UDSM, Nelson Mandela African Institute of Technology and others	<ul style="list-style-type: none"> ■ To conduct training and research on PHM ■ To disseminate research findings/ ■ To provide advisory services to the Government and the private sector
Development Partners (DPs)	Development partners supporting PHM interventions (FAO, SDC, GIZ, BMGF, AMDT, AGRA, GAFSP, USAID, European Union, IFAD, JICA, Dfid, and other potential partners,	<ul style="list-style-type: none"> ■ To provide technical support and financial resources
Private Sector	PHT manufactures, distributors, processors, transporters, aggregators, farmers, agro-dealers, traders and service providers such as hotels, restaurants, supermarkets	<ul style="list-style-type: none"> ■ Investment in the marketing and storage infrastructure ■ Facilitate capacity building ■ To develop and disseminate approved appropriate post-harvest technologies

Category	Institutions	Key responsibilities and functions
Non- State Actors	NGOs, local and international, CSOs, CBOs	<ul style="list-style-type: none"> ■ Participate in the thematic working groups ■ Conduct advocacy Monitoring and evaluation of strategy implementation ■ Provide technical support ■ Contribute to resource mobilization and activity implementation ■ through dialogue, workshops, and conferences on PHM ■ Support public awareness creation through media. ■ Conduct research and dissemination of PHM information
	PHM stakeholder's forum- Tanzania Post Harvest Management Platform (TPMP)	<ul style="list-style-type: none"> ■ Provide a platform for PHM stakeholders from both the public and private sector to meet, share experiences, learn from each other and discuss challenges and solutions ■ Create awareness on PHM ■ Enhance coordination and linkages among PHM actors
Cooperatives	SACCOS, AMCOS, VICOBA	<ul style="list-style-type: none"> ■ To facilitate aggregation, sorting and grading, storage, transport, distribution and marketing of crops
Media	International and Local media houses	<ul style="list-style-type: none"> ■ Prepare, document and disseminate PHM media programs ■ Prepare and organize media dialogue on PHM
Financial Institutions	TADB, TIB, SACCOS, Commercial Banks and Microfinance, Mobile money companies	<ul style="list-style-type: none"> ■ To design and promote financial products to finance PHM interventions ■ To provide soft loans and credit to finance PHM specific investments
Crop Producers	Small, Medium and Large-scale farmers	<ul style="list-style-type: none"> ■ To adhere to the available PHM guidelines ■ To adopt/adapt PHM best practices ■ To adopt PHM technologies. ■ Provide feedback and information related to the usability, efficiency, and challenges of PHTs

3. STRATEGY IMPLEMENTATION PLAN (SIP)

3.1. Introduction

The SIP is a tool that is designed to guide implementers to consistently move from the plan to reality, trying to provide answers as to how, when, by whom and at what cost the planned interventions will be realized. The fact that a number of interventions under the NPHMS are to be implemented by various actors, proper coordination, sequencing, prioritization and consensus is necessary. This chapter specifically presents how and by who the nine strategic objectives will be implemented.

3.2. Purpose of Strategy Implementation Plan (SIP)

The main purpose of SIP is to develop an effective and efficient Post-Harvest Management road map that will allow the government and the key stakeholders to have implementation framework, which is practically workable, result oriented and measurable both in medium and long term time lines. The specific justifications for formulating the SIP are;

- i. Align PHM Strategy with ASDP II and other relevant policies and strategies,
- ii. Interpret and develop strategic linkages between the vision and mission of NPHMS along with its Strategic Objectives. This calls for identifying key building blocks from Strategic Objective to related Strategic interventions, targets and requisite financing as a major input into Monitoring and Evaluation Framework,
- iii. Formulate the first five-year SIP as a means to speed up the realization of NPHM Strategic Objectives; this is necessary for spearheading achievements,
- iv. Ensure preparation of comprehensive, complementary and well-articulated sequential implementation framework, and
- v. Formulate a Monitoring and Evaluation Framework that check consistency, coherence, outcome and impact

3.3. SO, A: Facilitate awareness of good handling practices to improve efficiency and reduce crop losses along the value chain.

The aim of this strategic objective is to increase awareness to the public on the causes, effects and good PHM handling practices in order to improve efficiency and reduce losses along the food crop value chains. In order to achieve its intended aim, this strategic objective will focus on four strategic interventions which are; (i) Implementing communication strategies to raise awareness on how to reduce crop losses; (ii) capacity building for all actors on PHL; (iii) promote actor specific best handling practices along the value chain; and (iv) Improve capacity of PHM actors to prevent and control contaminations along the value, e.g. mycotoxins, pesticide/other chemicals residuals.

The aforementioned strategic intervention will be implemented through various activities and actors as highlighted in table 2 below.

Table 2: Strategic Objective A

S/n	Strategic intervention	Activities	Actors and their responsibilities
1	Implement communication strategies to raise awareness of food losses, causes and impact	1.1 To compile and consolidate relevant information on PHL causes, impacts and solutions -information from public and private sector.	Led by MOA in collaboration with DPs (FAO, HELVETAS, AGRA, EU), Research and academic institutions (ESRF, REPOA, SUA, UDSM), BAKITA, national level and local PHM Platforms (TPMP), PHTs companies/manufacturers, NGOs/CSOs (ANSAF, TAHA, MVIWATA, ACT, RUDI, Farm Africa, EAGC, RCT, Media houses and other potential actors
		1.2 To translate (into Kiswahili) the compiled information into user-friendly form - including popular versions	

		1.3 Work with media houses to prepare and disseminate various PHM programs through (Radio, TV, Publications, Internet, and social media)-information on causes, impacts and handling practices	
		1.4 Organize dedicated agricultural shows on PHM including exhibitions of PHTs and support PHM stakeholders to participate in existing relevant national shows such as Nane Nane.	
		1.5 Strengthen and capacitate WRC, PHM centers and FFS as channels and outlets for PHM information by providing them with working tools, relevant training.	
2	Capacity building for all actors on PHL	<p>2.1. Prepare, review and harmonize training manuals for PHM-on causes, impacts and solutions for specific value chains.</p> <p>2.2. conduct training on PHM to all actors along the value chain-including SHFs, extension officers, agro dealers, MSMEs, Private sector</p> <p>2.3 Facilitate availability of working tools packages to extension officers.</p>	ASLMs led by MOA will collaborate with other actors such as DPs (FAO, HELVETAS), Research and academic institutions (ESRF, REPOA, SUA, UDSM), TFNC, Private sector, NGOs/CSOs

3	Promote actor specific best handling practices along the value chain	3.1. Identify champions on specific best handling practices	ASLMs led by MOA in collaboration with DPs (FAO, HELVETAS), Research and academic institutions (ESRF, REPOA, SUA, UDSM), Private sector, NGOs/CSOs (EAGC) and media houses
		3.2. Facilitate exchange visits among actors	
		3.3. Prepare documentaries of the best specific handling practices along the value chain	
4	Improve the capacity of PHM actors to prevent and control contaminations along the value chains, e.g. mycotoxins, pesticide/ other chemicals residuals	4.1. To conduct a comprehensive survey to establish causes, magnitude and spread of mycotoxins, pesticide/ other chemicals residuals contamination	MOA in collaboration with DPs (AfDB, FAO, HELVETAS, AGRA, EU), Research and academic institutions (IITA, ESRF, REPOA, SUA, UDSM, NM-AIST), NBS, Chief Chemist, TPRI, Private sector, GOs/CSOs, PACA, media houses
		4.2. Establishment and operationalization of National Agricultural Reference Laboratory;	

3.4. SO, B: Promote availability, accessibility and adoption of tested technologies to reduce post-harvest losses

This Strategic Objective aims to promote availability, accessibility and adoption of tested technologies to reduce post-harvest losses along various value chains. The strategic objective will be implemented through two strategic interventions which are (i) Enhance actor's awareness and utilization of proven PHTs and (ii) Promote agro-processing along the value chain.

The aforementioned strategic interventions will be implemented through various activities and actors as highlighted in table 3 below.

Table 3: Strategic Objective B

S/n	Strategic intervention	Activities	Actors and their responsibilities
1	Enhance actor's awareness and utilization of proven PHTs	1.1 To mobilize and sensitize actors on the appropriate use of PHTs through FFS, exhibitions and demonstrations.	MoA in collaboration with ALMs, DPs- (FAO, AGRA, AMDT, SDC, USAID, EU, GIZ, IFAD), NGOs/CSOs- (ANSAF, ACT, RUDI, CSDI, BRITEN, MVIWATA, PELUM, INADES Formation, RCT, Farm Africa), Private sectors, PHTs manufacturers and traders, media and other potential actors.
		1.2 To disseminate information on available and proven technologies (hermetic bags, cold chain facilities, silos, cocoons)	
		1.3 To support and facilitate the usage of proven technologies through price subsidization and demonstrations.	
2	Promote agro-processing along the value chain	1.1 Promote innovation and production of affordable and efficient processing units through capacitating SIDO, CARMATEC and support private sector initiatives.	MoA in collaboration with MIT, PO-RALG, TIC, Cooperatives, SIDO, CARMATEC, VETA, TBS, TFDA NGOs/CSOs (TPSF, TCAA, TANTRADE, ACT, ANSAF, MVIWATA, EAGC, and other potential actors.
		1.2 Promote the adoption of affordable and efficient processing units through sensitization programs to MSMEs	

3.5. SO, C: Facilitate agricultural marketing systems to improve market access and minimize post-harvest losses

This strategic objective intends to improve marketing systems and access including marketing infrastructures for the purpose of post-harvest loss reduction to keep pace with increasing production. The strategic objective comprises of two strategic interventions: (i) improving and formalizing market access to reduce post-harvest losses; and (ii) ensuring the availability of specialized human resources to manage marketing infrastructure.

The aforementioned strategic interventions will be implemented through various activities and actors as highlighted in table 4 below;

Table 4: Strategic Objective C

S/n	Strategic intervention	Activities	Actors and their responsibilities
1.	Improve market access to reduce post-harvest losses	1.1. Establish and strengthen existing produce handling systems (transport and storage, pack houses, cold chain/rooms, warehouses and silos).	MoA in collaboration with MoFP, PO-RALG, MIT, MoWTC, LGAs, TARURA, NFRA, CPB, WRRB, REA, DPs- (FAO, AGRA, AMDT, SDC, USAID, EU, AfDB, GIZ, IFAD) NGOs/CSOs (TAHA, HELVETAS, ANSAF, World Vision, IITA, MVIWATA, Farm Africa, RUDI, Aga Khan Foundation and other potential actors
		1.2. Identify strategic areas with high production for market linkages	
		1.3. Harmonize the existing market information system to provide efficient needed marketing information	

		1.4. Facilitate agricultural marketing section at MoA to conduct researches on market intelligence for crops grown in the country and link with local and international markets	
		1.5. Link key crop marketing information system to the Tanzania Mercantile Exchange (TMX) system	
		1.6. Scale up Warehouse Receipt System (WRS) to other crops	
		1.7. Construct and rehabilitate rural roads and electrification to ensure access to the market points/centres	
		1.8. Establish and strengthen farmers organizations (e.g. AMCOS)	
2.	Ensure availability of specialized human resources to manage marketing systems,	2.1. Recruit and train marketing infrastructure operators	MoA in collaboration with Presidents Office-public services and good governance, USAID, FAO, AGRA and JICASUA, UDSM, NM-AIST and other potential actors.
		2.2. Facilitate warehouse operators with working tools	MoA in collaboration with WRRB, MIT, DPs- (FAO, AGRA, AMDT, SDC, USAID, EU, GIZ, IFAD), NGOs/ CSOs- (ANSAF, ACT, RUDI, CSDI, BRITEN, MVIWATA, PELUM, INADES Formation, RCT, Farm Africa), Private sectors, PHTs manufacturers and traders

3.6. SO, D: Promote research and innovations of new and appropriate technologies and methods to reduce crop losses

This strategic objective aims at encouraging researchers to conduct more research on PHL and introduce innovative technologies; undertaking verification exercise of existing technologies on PHL as well as the establishment of a database on PHM. The strategic objective has three strategic interventions: (i) ensuring inclusion of PHM issues in agriculture research themes; (ii) verification of existing, emerging, innovative and certified technologies to reduce post-harvest losses; and (iii) establishing database management system on PHM.

The roles and responsibilities of key actors for implementing the respective strategic interventions and activities are explained in table 5 below;

Table 5: Strategic Objective D

S/n	Strategic intervention	Activities	Actors and their responsibilities
1.	Ensure inclusion of PHM issues in agriculture research themes	1.1. incorporate PHM issues in agriculture research agendas	MoA in collaboration with the academic and research institutions (TARI, COSTECH, NBS, SUA, UDSM, NM-AIST,ESRF,REPOA)DPs (FAO, AGRA, SDC, AMDT, USAID, HELVETAS, BMGF) NGOs/ CSOs and other potential actors.
		1.2. Facilitate research and development on PHM	
2.	Verification of existing, emerging, innovative and certified technologies to reduce post-harvest losses	2.1. Mapping of existing PHTs	MoA in collaboration with PHT manufacturers, Helvetas, AGRA, FAO, IITA, TBS, CARMATEC, SIDO, VETA and other potential actors.
		1.2 Conduct adaptive research to test and perfect PHTs before dissemination	
		2.3 Support PH tech innovations	
		2.4 Dissemination of PHM research findings (both technologies and social research)	

3.	Establish database management system on PHM	3.1. Incorporate PHM data in ARDS.	MoA in collaboration with MITI, PO-RALG, NBS,TARI, DPs(USAID, AGRA, FAO and JICA), NGOs/CSOs and other potential actors
		3.2. Conduct a comprehensive baseline survey to establish the status of the PHL in the country,	
		3.3. Collect routine data for updating the PHL data within ARDS and monitor the extent of PHL.	

3.7. SO, E: Review and put in place new guidelines and regulations to enhance standards and practices to minimize PHL.

This strategic objective aims to provide guidelines on various post-harvest issues to actors along the value chains. In order to achieve the objective one strategic intervention will be implemented which is; (i) Incorporate PHM aspects in existing legislation.

Activities to achieve this objective and responsible actor are explained in table 6 below;

Table 6: Strategic Objective E

S/n	Strategic intervention	Activities	Actors and their responsibilities
1	Incorporate PHM aspects in existing legislation	1.1 Identify, review and analyze relevant regulations, by-laws, to include PHM aspects.	MoA in collaboration with ASLMs (PO-RALG, MIT, Ministry OF JUSTICE AND Constitutional Affairs, Parliament of the URT), MWTC and LGAs, DPs (HELVETAS, FAO, AGRA, AMDT), Research institutions (ESRF, REPOA, SUA, UDSM, UDOM) MVIWATA, ANSAF, ACT, EAGC, TAHA, TIRDO, SIDO, Media houses and other potential actors
		1.2 Identify, review and analyze guidelines on post-harvest management.	
		1.3 Conduct sensitization and facilitate dissemination of reviewed guidelines and regulations on PHM	

3.8. SO,F:Strengthencoordination,partnerships,andstakeholders' participation to enhance strategy interventions

This strategic objective aims at strengthening coordination, partnerships, and stakeholders' participation by implementing the following Strategic interventions: (I) Enhance coordination at all levels to improve involvement of key actors in various PHM issues (ii) Establish and manage investments incentive packages to increase private sector participation in PHM (iii) Strengthen human resource base of the PHLM lead institution (s).

Detailed activities to achieve this objective and responsible actor are explained in table 7 below;

Table 7: Strategic Objective F

S/n	Strategic intervention	Activities	Actors and their responsibilities
1.	Enhance coordination at all levels to improve the involvement of key actors in various PHM issues	1.1. Mapping key stakeholders in various PHM issues	MoA in collaboration with ASLMs (PO-RALG, MIT), PMO, MWTC and LGAs, DPs(HELVETAS, FAO, AGRA,US-AID, ESRF,REPOA, Research and academic institutions,(SUA, UDSM, UDOM,NM-AIST), MVIWATA, ANSAF, ACT, CPB, EAGC, RCT, RUDI TAHA, TIRDO, SIDO, Media houses and other potential actors
		1.2. Organize regular stakeholders' coordination meetings at national and LGAs levels	
		1.3. Conduct quarterly coordination and Management Team (CMT) meetings	

S/n	Strategic intervention	Activities	Actors and their responsibilities
		1.4. Strengthen the existing Tanzania PHM Platform	
		1.5. Strengthen national coordination unit in the Ministry responsible for Agriculture	
		1.6. Form and strengthen Thematic Working Groups (TWG) and appoint Focal Persons at RS & LGAs level	
		1.7. Facilitate periodic monitoring and evaluation of the strategy implementation.	
2.	Establish and manage investments incentive packages to increase private sector participation in PHM	2.1. Identify and recommend investment incentive packages for PHM	MoA in collaboration with ASLMs (PO-RALG, MoFP) MIT), MWTC, TIC and LGAs, DPs (HELVETAS, FAO, AGRA, AMDT, EU, SDC) , Research and academic institution (ESRF, REPOA, SUA, UDSM, UDOM, NM-AIST), Private sector, NGOs/CSOs (MVIWATA, ANSAF, ACT, CPB, EAGC, TAHA) and other potential actors
3.	Strengthen human resource base of the PHLM lead institution(s)	3.1. Recruit human resources and human resource development 3.2. Conduct regular capacity building programmes to PHL lead Institutions	MoA in collaboration with ASLMs (PO-RALG, PO-Public services and good governance), MWTC and LGAs, DPs such as HELVETAS, FAO, AGRA, Private sector including MVIWATA, ANSAF, ACT, CPB, EAGC, TAHA, RCT, Farm Africa and other potential actors

3.9. SO, G: Adapt post-harvest management systems to mitigate the effects of climate change

This Strategic objective aims at ensuring the availability of relevant information to mitigate Post-harvest losses attributed to the effect of climate change. The Objective has two Strategic interventions which include; (i) Ensure provision of Climate Change – PHM relevant information, early warning systems, and (ii) Introduce innovative Post-harvest Climate Resilience technologies, and infrastructure.

The aforementioned strategic intervention will be implemented through various activities and actors as highlighted in table 8 below.

Table 8: Strategic Objective G

S/n	Strategic intervention	Activities	Actors and their responsibilities
1	Ensure provision of Climate Change – PHM relevant information, early warning systems	<p>1.1 To sensitize farmers and other stakeholders on uses and sources of early warning information on Climate Change that affects PHM</p> <p>1.2 To promote to the public/farmers on growing crop varieties which are less susceptible to CC effects through media and handouts</p> <p>1.3 To institutionalize and strengthen linkage and flow of agro-meteorological information and products from Tanzania</p>	MOA in collaboration with TMA, DPs (USDA, USAID, FAO, AGRA, AMDT, HELVETAS), Private sectors (PHTs manufacturers and traders), NGOs/CSOs (MVIWATA, ANSAF, ACT, CPB, EAGC, TAHA, Farm Africa, RUDI, BRITEN) National Carbon Monitoring Center, and other potential actors
2	Introduce innovative Post-harvest Climate Resilience technologies, and infrastructure	2.1 To promote Adoption of best practices and low-cost drying and cooling, including low-carbon technologies for drying and cooling	MOA in collaboration with TMA, DPs (USDA, USAID, FAO, AGRA, AMDT, HELVETAS), Private sectors (PHTs manufacturers and traders), NGOs/CSOs (MVIWATA, ANSAF, ACT, CPB, EAGC, TAHA), Farm Africa, RUDI, BRITEN) National Carbon Monitoring Center, and other potential actors

3.10. SO, H: Addressing inadequacy in PHM financing

This strategic objective intends to strengthen existing and introduce new innovative products and instruments to finance PHM interventions.

The strategic objective comprises of three strategic interventions namely: (i) introduce innovative financial mechanisms to support investments, promotion, distribution and utilization of PHTs; (ii) establish mechanisms to de-risk and introduce blended finance; and (iii) ensure timely availability of adequate financial resources to the PHM lead institutions.

Implementation of these interventions and respective actors are explained in table 9 below.

Table 9: Strategic Objective H

S/n	Strategic intervention	Activities	Actors and their responsibilities
1.	Introduce innovative financial mechanisms to support investments, promotion, distribution and utilization of PHTs	1.1 Design and pilot new financial inclusion products that promote access to PHT	MoA in collaboration with BoT, MoFP-TADB, MoA-TCDC,, private sector DPs (FAO, AGRA, AMDT, HELVETAS, SDC, USAID, DANIDA, IFAD, AfDB) NGOs/ CSOs (Financial Sector Deepening Trust -FSDT, Tanzania Association of Microfinance Institutions - TAMFI, SAGCOT Catalytic Trust Fund, and Tanzanian Federation of Cooperatives-TFC) and Commercial Banks (CRDB, NMB), Mobile money companies and other potential partner
		1.2 Promote access to financial services through the use of low-cost and innovative ICT delivery mechanisms	
2.	Establish mechanisms to de-risk and introduce blended finance.	2.1 Facilitate credit guarantee facilities to improve market terms & boost lending to SMEs	MoA in collaboration with BoT, MoFP-TADB, MoA-TCDC, TIRA, private sector DPs (FAO, AGRA, AMDT, HELVETAS, SDC, USAID, DANIDA, IFAD, AfDB) NGOs/CSOs (Financial Sector Deepening Trust -FSDT, Tanzania Association of Microfinance Institutions - TAMFI, SAGCOT Catalytic Trust Fund, and Tanzanian Federation of Cooperatives-TFC, MVIWATA, TAHA, RCT, ANSAF, ACT, FARM AFRICA, RUDI), Commercial Banks (CRDB, NMB), Insurance companies, Mobile money companies and other potential partners
		2.2 Enhance revolving fund blending a credit line with grants for the manufacturing and distribution of PHTs	
		2.3 Promote the adoption of crop insurance scheme	

S/n	Strategic intervention	Activities	Actors and their responsibilities
3.	Ensure timely availability of adequate financial resources to the PHM lead institutions	<p>3.1 To advocate on the importance of financing PHM initiatives to the decision makers at all levels.</p> <p>3.2 To solicit funding from the public and non-public sector for PHM.</p>	MoA in collaboration with BoT, MoFP-TADB, MoA-TCDC, private sector, DPs (FAO, AGRA, AMDT, HELVETAS, SDC, USAID, DANIDA, IFAD BMGF, AfDB) Financial Sector Deepening Trust –FSDT, SAGCOT Catalytic Trust Fund, SACCOs, PASS, Commercial Banks (TIB, CRDB, NMB), TADB, NGOs/CSOs (ANSAF, ACT, AGRA, PASS, ESRF, BMGF and other potential partners

3.11. SO, I: Develop standard methodologies for collecting data and estimating post-harvest losses in a country

This strategic objective aims at harmonizing the existing PHL assessment methodologies and establishing national data on PHL. This strategic objective will be achieved through review and harmonization of existing PHLs assessment methodologies.

Detailed activities to achieve these objective and responsible actors are explained in table 10.

Table 10: Strategic Objective I

S/n	Strategic intervention	Activities	Actors and their responsibilities
1	Review and harmonize existing PHLs assessment methodologies	<p>1.1 Identify existing methodologies for PHLs assessment</p> <p>1.2 Review and propose the standard methodologies for national PHLs assessment</p> <p>1.3 Incorporate agreed methodologies for PHLs assessment in training institute curricula</p>	MoA in collaboration with ASLMs (PO-RALG, MIT), NBS, MWTC and LGAs, DPs such as HELVETAS, FAO, AGRA, Research and an academic institution (ESRF, REPOA, SUA, UDSM, UDOM-NM-AIST), Private sector including MVIWATA, ANSAF, ACT, EAGC, TAHA

4. FINANCING PLAN OF SIP

Financing the SIP is a necessary building block for achieving intended Strategic Objectives and related targets and indicators (as prescribed in the Monitoring and Evaluation Framework). Given the multi-sectoral nature of the SIP financing automatically requires the involvement of all key stakeholders, with the Government taking a lead. In that regard, the financing of the PHMS will be through a variety of sources including the Government, Development Partners and Non-State Actors, namely, Private sector, CBOs, INGOs, CSOs, Cooperatives, Financial Institutions, farmers and standalone projects such as TANIPAC. The various financing sources for the SIP will have to abide by the existing financing modalities established by the Government. These include General budget support, Basket fund and standalone project. All these financing sources and modalities will have to conform to the identified strategic interventions in order to ensure requisite Monitoring and Evaluation of the SIP. In this context, the MoA will play Strategic role in both soliciting for financing and assuring appropriate allocations to various strategic intervention as per SIP.

On the basis of identified Strategic Objectives and related Strategic interventions, the financing cost over a period of five years of the SIP amount to **TZS 111,893,420,705** as shown in table 11. Of this total amount, the contribution by the government and DPs will be 41 percent, with the remaining 59 percent to be contributed by the Non-state actors including; Private sector, CBOs, INGOs, CSOs, Cooperatives, Financial Institutions and other potential actors.

Table 11: NPHMS financing plan (TZS)

Appendix A: Estimated annual cost for implementing PHM

SO	STRATEGIC OBJECTIVE (SO)	Time Frame and Annual budget					Total cost	Financing source
		Year 1	Year 2	Year 3	Year 4	Year 5		
A.	Facilitate awareness of good handling practices	1,530,175,000	2,874,363,652	19,943,224,600	724,121,155	807,749,271	25,879,633,678	
B.	Promote availability, accessibility and adoption of tested technologies to reduce post-harvest losses	441,050,000	651,555,000	534,260,000	579,865,000	868,541,500	3,075,271,500	
C.	Facilitate agricultural marketing systems to improve market access and minimize post-harvest losses	15,232,140,000	5,701,325,000	5,820,402,500	11,300,522,750	28,535,675,025	66,590,065,275	
D.	Promote research and innovations of new and appropriate technologies and methods to reduce crop losses	1,649,625,000	988,103,952	957,774,347	3,183,151,782	3,666,526,960	10,445,182,041	

SO	STRATEGIC OBJECTIVE (SO)	Time Frame and Annual budget					Total cost	Financing source
		Year 1	Year 2	Year 3	Year 4	Year 5		
E.	Review and put in place new guidelines and regulations to enhance standards and practices to minimize PHL	88,400,000	204,150,000	98,520,000	108,372,000	119,209,200	618,651,200	
F.	Strengthen coordination, partnerships, and stakeholders' participation	679,870,000	445,852,000	490,437,200	539,480,920	714,510,082	2,870,150,202	
G.	Adapt PHM systems to mitigate the effects of climate change	311,700,000	120,439,000	299,102,900	145,731,190	354,694,309	1,231,667,399	
H.	Addressing inadequacy in PHM financing	255,400,000	200,890,000	168,311,000	185,142,100	203,656,310	1,013,399,410	
I.	Develop standard methodologies for collecting data and estimating PHL in a country	169,400,000	-	-	-	-	169,400,000	
	TOTAL	20,357,760,000	11,186,678,604	28,312,032,547	16,766,386,897	35,270,562,657	111,893,420,705	

5. MONITORING AND EVALUATION FRAMEWORK

The Monitoring and Evaluation system of the PHM strategy will have the function of tracking the implementation of the planned activities and subsequently to make corrective measures on the implementation strategy when the need arises. Although the M&E hub for PHM needs to be situated in MoA, the M&E activities will be implemented collaboratively by key stakeholders in order to upscale the M&E results across the value chain. Both internal and external M&E will be undertaken accordingly. There will be both mid-term and end of period M&E that will be participatory in nature as summarized in **Gant Chart 1 & 2 below**.

The monitoring activity involves systematic and regular data collection, processing, analysis and reporting of the findings to PHM Steering Committee and relevant Forums and Stakeholders. It is primarily used to compare planned targets against achievements. It is an important tool that will enable stakeholders to detect deviation from the target plan in time and hence make the necessary corrections.

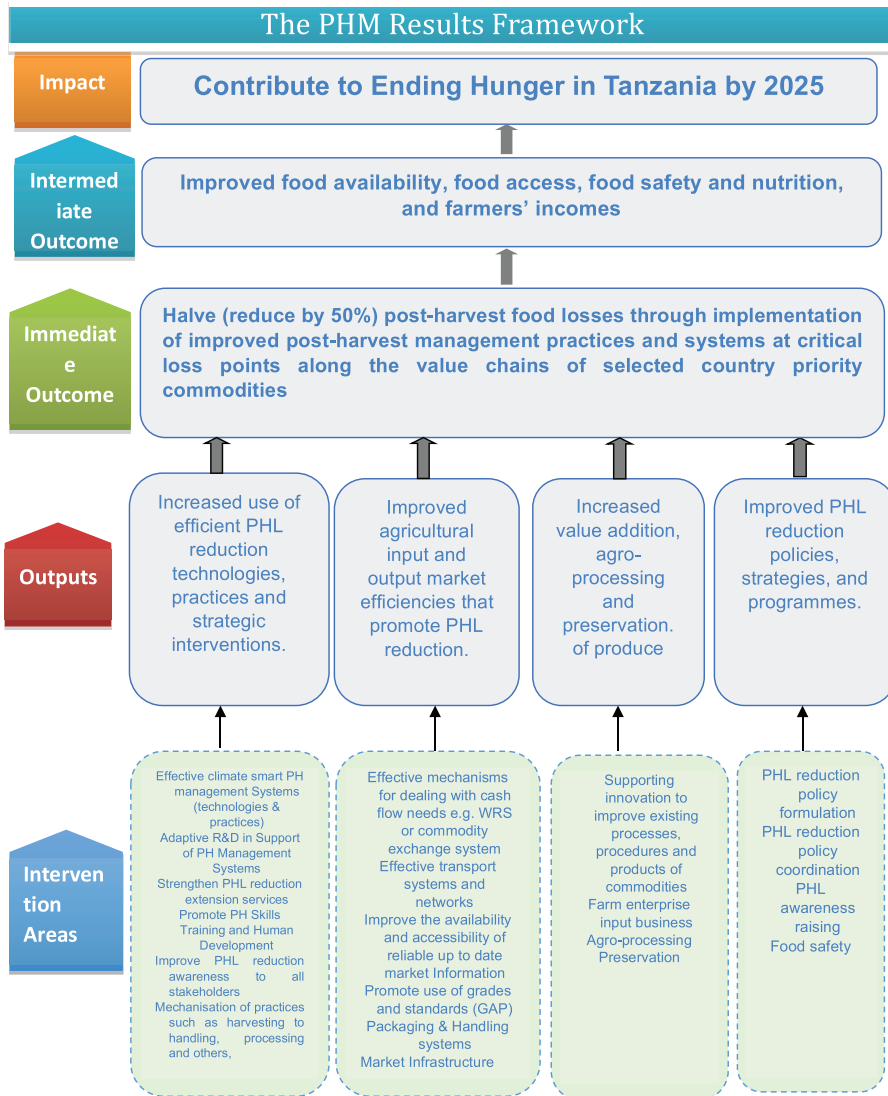
Gant Chart 1: Timeline and interventions

Evaluation Activity	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	March	April	May	Jun
Quarterly Data Reporting												
Annual Report												
Progress monitoring and learning												
Meetings												

Gant Chart 2: Evaluation of the strategy implementation

Evaluation Activity	Year1	Year2	Year3	Year4	Year5	Year6	Year7	Year8	Year9	Year10
Scoping study (to provide information to estimate targets)										
Baseline survey										
Joint/Periodic reviews/ assessments										
Mid and final review respectively										
Impact evaluation										

Figure 1: NPHMS M&E result framework



6. APPENDICES

Appendix A: Estimated annual cost for implementing PHM management strategic intervention

SO	Management Intervention	Activity	Time Frame and Annual budget					Total cost
			Year 1	Year 2	Year 3	Year 4	Year 5	
SOA	Implement communication methods to raise awareness of food crop losses, causes and impact	To compile and consolidate relevant information on PHL causes; impacts and solutions -information from public and private sector.	37,400,000	-	-	43,290,000	-	80,690,000
		To translate (into Kiswahili) the compiled information into user friendly form- including popular versions	106,675,000	-	-	128,100,000	-	234,775,000
		Work with media houses to prepare and disseminate various PHM programs	125,800,000	137,590,000	150,080,000	163,540,000	175,060,000	752,070,000
		Organize agricultural shows on PHM including exhibitions of PHIs	43,200,000	47,520,000	56,160,000	60,480,000	64,800,000	272,160,000
		Strengthen and capacitate 10 WRC and FFS as channels and outlets for PHM information and technologies	208,000,000	249,600,000	-	-	-	457,600,000

SO	Management Intervention	Activity	Time Frame and Annual budget					Total cost
			Year 1	Year 2	Year 3	Year 4	Year 5	
	Total Intervention 1		521,075,000	434,710,000	206,240,000	395,410,000	239,860,000	1,797,295,000
	Capacity building for all actors on PHL	Prepare and harmonize training manuals for PHM along the value chain	39,050,000	-	-	-	-	-
		Conduct training on PHM to all actors along the value chain-including SHFs, extension officers, agro dealers, MSMEs, Private sector	-	387,201,452	237,300,000	260,401,155	286,441,271	1,171,343,878
		Facilitate availability of working tools packages to extension officers.	680,400,000	-	-	-	-	680,400,000
	Total Intervention 2		719,450,000	387,201,452	237,300,000	260,401,155	286,441,271	1,851,743,878
	Promote actor specific best handling practices along the value chain	Identify champions on specific best handling practices	129,950,000	-	-	-	175,210,000	305,160,000
		Facilitate exchange visits among actors to learn		62,100,000	-	68,310,000	-	130,410,000
		Prepare documentaries of the best specific handling practices along the value chain	87,600,000	-	96,360,000	-	106,238,000	290,198,000

SO	Management Intervention	Activity	Time Frame and Annual budget					Total cost
			Year 1	Year 2	Year 3	Year 4	Year 5	
	Total Intervention 3		217,550,000	62,100,000	96,360,000	68,310,000	281,448,000	725,768,000
	Improve capacity of PHM actors to prevent and control contaminations along the value chains, e.g. mycotoxins, pesticide/other chemicals residuals	To conduct comprehensive survey to establish causes, magnitude and spread of mycotoxins, pesticide/other chemicals residuals contamination	72,100,000	-	-	-	-	72,100,000
		Infrastructure Development for controlling of aflatoxin	-	1,990,352,200	19,403,324,600	-	-	21,393,676,800
	Total Intervention 4		72,100,000	1,990,352,200	19,403,324,600	-	-	21,465,776,800
	Total SO A		1,530,175,000	2,874,363,652	19,943,224,600	724,121,155	807,749,271	25,840,583,678

SO	Management Intervention	Activity	Time Frame and Annual budget					Total cost
			Year 1	Year 2	Year 3	Year 4	Year 5	
SOB	Enhance actor's awareness and utilization of proven PHIs	To mobilize and sensitize actors on appropriate use of PHIs through FFS, exhibitions and demonstrations.	142,450,000	156,695,000	170,940,000	185,185,000	199,430,000	854,700,000
		To disseminate information on available and proven technologies	116,550,000	128,205,000	139,860,000	151,515,000	163,170,000	699,300,000
		To support and facilitate usage of proven technologies through price subsidization and demonstrations.	-	162,900,000	-	-	228,060,000	390,960,000
	Total Intervention 1		259,000,000	447,800,000	310,800,000	336,700,000	590,660,000	1,944,960,000
	Promote Agroprocessing along the value chain	Promote innovation and production of affordable and efficient processing units through capacitating SIDO, CARMATEC and support private sector initiatives.	115,000,000	130,000,000	143,000,000	156,000,000	182,000,000	726,000,000
		Promote adoption of affordable and efficient processing units through sensitization programs to M/ SEMEs	67,050,000	73,755,000	80,460,000	87,165,000	95,881,500	404,311,500

SO	Management Intervention	Activity	Time Frame and Annual budget					Total cost
			Year 1	Year 2	Year 3	Year 4	Year 5	
	Total Intervention 2		182,050,000	203,755,000	223,460,000	243,165,000	277,881,500	1,130,311,500
	Total SO B		441,050,000	651,555,000	534,260,000	579,865,000	868,541,500	3,075,271,500
SOC	Improve market access to reduce post-harvest losses	Establish and strengthen existing produce handling systems (e.g. transport and storage) at all levels (pack houses, cold chain/rooms, warehouses, silos etc.).	15,205,750,000	5,291,275,000	5,820,402,500	11,300,522,750	28,535,675,025	66,153,625,275
		Identify strategic areas with high production for market linkages	26,390,000	-	-	-	-	26,390,000
		Harmonize the existing market information system to provide efficient needed marketing information	-	279,800,000	-	-	-	279,800,000
		Facilitate agricultural marketing section at MoA to conduct investigation on market intelligence for crops grown in the country and link with local and international markets	96,370,000	-	106,007,000	-	116,607,700	

SO	Management Intervention	Activity	Time Frame and Annual budget					Total cost
			Year 1	Year 2	Year 3	Year 4	Year 5	
		Link key crop marketing information system to the Tanzania Mercantile Exchange (TMX) system	64,600,000	62,525,000	-	-	-	-
		Scale up Warehouse Receipt System (WRS) to other crops	41,840,000	-	46,024,000	-	-	-
		Coordinate construct and rehabilitate of rural roads and electrification to ensure access to the market points/ centers	33,350,000	39,590,000	-	-	-	-
		Establish and strengthen farmers organizations (e.g. AMICOS,)	92,900,000	-	102,190,000	-	-	-
		Total Intervention 1	15,232,140,000	5,571,075,000	5,820,402,500	11,300,522,750	28,535,675,025	66,459,815,275
	Ensure availability of specialized human resources to manage marketing systems, including its infrastructure	Recruit and train marketing infrastructure operators	-	130,250,000	-	-	-	130,250,000
		Facilitate warehouse operators with working tools	-	5,216,200,000	5,737,820,000	6,311,602,000	6,942,762,200	24,208,384,200

SO	Management Intervention	Activity	Time Frame and Annual budget					Total cost
			Year 1	Year 2	Year 3	Year 4	Year 5	
	Total Intervention 2		-	130,250,000	-	-	-	24,338,634,200
	Total SO C		15,232,140,000	5,701,325,000	5,820,402,500	11,300,522,750	28,535,675,025	90,798,449,475
SOD	Ensure inclusion of PHM issues in agriculture research themes	Incorporate PHM issues in agriculture research agendas	50,050,000	-	-	-	-	50,050,000
		Facilitate & coordinate research and development on PHM	117,900,000	-	-	-	165,060,000	282,960,000
	Total Intervention 1		167,950,000	-	-	-	165,060,000	333,010,000
	Establish database management system on PHM	Develop a tool to ensure active feeding of PHM data in existing database management system of the Ministry (Agricultural Routine Data System-ARDS)	-	117,400,000	-	-	-	117,400,000
		Conduct comprehensive baseline survey to establish status of the PHL in the country	400,800,000	-	-	-	-	400,800,000
		Collect routine PHM data for updating ARDS annually	204,300,000	224,730,000	247,203,000	271,923,300	299,115,630	1,247,271,930

SO	Management Intervention	Activity	Time Frame and Annual budget					Total cost
			Year 1	Year 2	Year 3	Year 4	Year 5	
	Total Intervention 2		605,100,000	342,130,000	247,203,000	271,923,300	299,115,630	1,765,471,930
	Verification of existing, emerging, innovative and certified technologies to reduce post-harvest losses	Mapping of existing PHTs	302,100,000	-	-	-	-	302,100,000
		Conduct adaptive research to test and perfect PHTs before dissemination	225,975,000	248,572,500	273,429,750	2,430,372,725	2,673,409,998	5,851,759,973
		Support PH tech innovations	348,500,000	-	-	-	-	348,500,000
		Dissemination of PHM research findings (both technologies and social research)	-	397,401,452	437,141,597	480,855,757	528,941,333	1,844,340,139
	Total Intervention 3		876,575,000	645,973,952	710,571,347	2,911,228,482	3,202,351,330	8,346,700,111
	Total SO D		1,649,625,000	988,103,952	957,774,347	3,183,151,782	3,666,526,960	10,445,182,041
SOE	Incorporate PHM aspects in existing legislation and guidelines	Identify and review relevant legislation, by laws to include PHM aspects	88,400,000	-	-	-	-	88,400,000
		Identify and review and analyse guidelines on postharvest management.	-	122,050,000	-	-	-	122,050,000

SO	Management Intervention	Activity	Time Frame and Annual budget					Total cost
			Year 1	Year 2	Year 3	Year 4	Year 5	
		Conduct sensitization and dissemination to key stakeholders on reviewed guidelines and regulations on postharvest management in two zones annually.	-	82,100,000	98,520,000	108,372,000	119,209,200	408,201,200
	Total Intervention 1		88,400,000	204,150,000	98,520,000	108,372,000	119,209,200	618,651,200
	Total SO E		88,400,000	204,150,000	98,520,000	108,372,000	119,209,200	618,651,200
SOF	Enhance coordination at all levels to improve involvement of key actors in various PHM issues	Mapping key actors in various PHM issues	97,500,000	-	-	-	-	97,500,000
		Organize regular stakeholders' coordination meetings at national and LGAs levels	44,650,000	49,115,000	54,026,500	59,429,150	65,372,065	272,592,715
		Conduct quarterly coordination and Management Team (CMT) meetings	41,600,000	45,760,000	50,336,000	55,369,600	60,906,560	253,972,160
		Strengthen the existing Tanzania PHM Platform	72,100,000	79,310,000	87,241,000	95,965,100	105,561,610	440,177,710

SO	Management Intervention	Activity	Time Frame and Annual budget					Total cost
			Year 1	Year 2	Year 3	Year 4	Year 5	
		Strengthen national coordination unit in the Ministry responsible for Agriculture	124,500,000	-	-	-	-	124,500,000
		Form and strengthen Thematic Working Groups (TWG) and appoint Focal Persons at RS & LGAs level	171,750,000	188,925,000	207,817,500	228,599,250	251,459,175	1,048,550,925
		Facilitate periodic monitoring and evaluation of the strategy implementation.	20,200,000	22,220,000	24,442,000	26,886,200	150,655,890	244,404,090
	Total Intervention 1		572,300,000	385,330,000	423,863,000	466,249,300	633,955,300	2,481,697,600
	Establish and manage investments incentive packages to increase private sector participation in PHM	Identify investment barriers and recommend investment incentive packages for PHM	52,550,000	-	-	-	-	52,550,000
	Total Intervention 2		52,550,000	-	-	-	-	52,550,000
	Strengthen human resource base of the PHM lead institution(s)	Conduct capacity building and human resource development for PHM lead institution	55,020,000	60,522,000	66,574,200	73,231,620	80,554,782	335,902,602

SO	Management Intervention	Activity	Time Frame and Annual budget					Total cost
			Year 1	Year 2	Year 3	Year 4	Year 5	
	Total Intervention 3		55,020,000	60,522,000	66,574,200	73,231,620	80,554,782	335,902,602
	Total SO F		679,870,000	445,852,000	490,437,200	539,480,920	714,510,082	2,870,150,202
SOG	Ensure provision of Climate Change – PHM relevant information, early warning systems	Sensitize farmers and other stakeholders on uses and sources of early warning information on Climate Change that affects PHM	138,850,000	-	166,620,000	-	194,390,000	499,860,000
		To promote to the public/ farmers on growing crop varieties which are less susceptible to CC effects through media and handouts	73,200,000	80,520,000	88,572,000	97,429,200	107,172,120	446,893,320
		To institutionalize and strengthen linkage and flow of agro-meteorological information and products from Tanzania	18,500,000	20,350,000	22,385,000	24,623,500	27,085,850	112,944,350
	Total Intervention 1		230,550,000	100,870,000	277,577,000	122,052,700	328,647,970	1,059,697,670

SO	Management Intervention	Activity	Time Frame and Annual budget					Total cost
			Year 1	Year 2	Year 3	Year 4	Year 5	
	Introduce innovative Post-harvest Climate Resilience technologies, and infrastructure	To promote Adoption of best practices and low cost drying and cooling, including low-carbon technologies for drying and cooling	81,150,000	19,569,000	21,525,900	23,678,490	26,046,339	171,969,729
	Total Intervention 2		81,150,000	19,569,000	21,525,900	23,678,490	26,046,339	171,969,729
	Total SO G		311,700,000.00	120,439,000.00	299,102,900.00	145,731,190.00	354,694,309.00	1,231,667,399.00
SOH	Introduce innovative financial mechanisms to support investments, promotion, distribution and utilization of PHTs	Design and pilot new financial inclusion products that promote access to PHT	44,950,000	-	-	-	-	44,950,000
		Facilitate credit guarantee facilities to improve market terms & boost lending to SMEs	47,600,000	52,360,000	57,596,000	63,355,600	69,691,160	290,602,760
Total Intervention 1			92,550,000	52,360,000	57,596,000	63,355,600	69,691,160	335,552,760

SO	Management Intervention	Activity	Time Frame and Annual budget					Total cost
			Year 1	Year 2	Year 3	Year 4	Year 5	
	Establish mechanisms to de-risk and introduce blended finance.	Facilitate credit guarantee facilities to improve market terms & boost lending to SMEs	9,000,000	10,800,000	-	-	-	19,800,000
		Enhance revolving fund blending a credit line with grants for the manufacturing and distribution of PHTs	30,900,000	37,080,000	-	-	-	67,980,000
	Total Intervention 2		39,900,000	47,880,000	-	-	-	87,780,000
	Ensure timely availability of adequate financial resources to the PHM lead institutions	To advocate on the importance of financing PHM initiatives to the decision makers and planners at all levels	91,500,000	100,650,000	110,715,000	121,786,500	133,965,150	558,616,650
		To solicit funding from public and non-public sector for PHM.	31,450,000	-	-	-	-	31,450,000
	Total Intervention 3		122,950,000	100,650,000	110,715,000	121,786,500	133,965,150	590,066,650
	Total SO H		255,400,000	200,890,000	168,311,000	185,142,100	203,656,310	1,013,399,410

SO	Management Intervention	Activity	Time Frame and Annual budget					Total cost
			Year 1	Year 2	Year 3	Year 4	Year 5	
SO1	Develop Harmonized National PHL assessment methodology	Review and propose the standard methodologies for national PHLs assessment	79,950,000	-	-	-	-	79,950,000
		Incorporate agreed methodologies for PHLs assessment in training institute curricula	89,450,000	-	-	-	-	89,450,000
	Total Intervention 1		169,400,000	-	-	-	-	169,400,000
	Total SO 1		169,400,000.00	-	-	-	-	169,400,000.00
	TOTAL BUDGET		20,357,760,000	11,186,678,604	28,312,032,547	16,766,386,897	35,270,562,657	111,893,420,705

Appendix B: M & E and Results Framework of the strategy

Appendix B1: Outcomes indicators

Indicators (Outcomes)	Indicator definition	Methodology	Baseline	Unit of measure	Source	Partner(s) Responsible	Target	Milestones
National food self-sufficiency	The ratio of gross domestic food production is compared with the domestic food requirement.	Total food production minus total food requirement over total food requirement	124	Percent	MoA (DNFS)	PO-RALG, NBS	Maintain Self Sufficient Ratio (SSR) in the range between 100% to 120% or above	SSR between 100% and 120%
Rural population below the poverty line	Rate of rural population below national poverty line,	(Poverty headcount ratio at national 2016-poverty headcount ratio at national 2025)/ poverty headcount ratio at national 2016 *	28.2	Percent	HBS-NBS	Private sector, NGO	Reduce poverty level by at least 50%, at national poverty line, from the year 2016 to the year 2025.	Reduce poverty level by 25% by 2021
Reduction rate of the gap between the wholesale price and farm-gate price	Difference between wholesale price and farm-gate price (priority commodity)	(Wholesale price minus farm-gate price) divide by farm-gate * 100	GAP	Percent	MoA (ARDS)	MITI, private sector	Contribute to poverty reduction by reducing the gap between the wholesale price and farm-gate price, by 50% by the year 2025, from the year 2016.	The gap be reduced by 25% by 2021
Proportion of household with low dietary diversity	Households that don't have access to a diverse range of nutrition food	Households that don't have access to nutritious food divide by the total number of households	Rural: (21.4%), Urban: (8.6%)	Percent	MOH (TFNC)	MoA	Reduce by half communities lacking diverse range of nutritious food annually from 2016 to 2025	Reduce by 25% by 2021
Share and value of PHM financial lending (SMEs, farmers etc.) to agricultural sector	Proportion of loan by financial institutions allocated in the PHM as compared to the magnitude in the agricultural sector	Share and value of lending to the PHM divide by the total amount loaned in the sector	GAP	Percent	MoF (BOT)	MoA	At least 50% of the share and value of financial sector lending be allocated to PHM by 2025	Share and value increase to at least 25% by 2021
Percentage increase of agro-processing investment units	Relates to investments in agro-processing.	Number of actual investments in Agro processing vs targeted investments.	GAP	Percentage	MoA, (ARDS)	MITI, TIC, TCCIA, private sector	at least 50% increase	25 % decrease after 5 years

Indicators (Outcomes)	Indicator definition	Methodology	Baseline	Unit of measure	Source	Partner(s) Responsible	Target	Milestones
Percentage of farmers using (WHRS) formal market arrangements	Relates to the farmers using warehouse receipt system to sale their commodities.	Number of farmers using formal markets vs targeted.	GAP	Percentage	MoA (DNFS) MITI	MITI, Crop Boards, EAGC	At least 50% increase	25 % decrease after 5 years
Functional PHM platforms (vertical and horizontal)	This relates to coordination and partnerships during implementation of NPHMS	Number of signed minutes divided by approved meetings	GAP	Percentage	MoA- (DNFS)	HELVETAS, INNODEV, PO-RALG, ANSAF, MVIWATA	At least 50% increase	25 % decrease after 5 years
Proportion of PHM budget in the sector	This relates to increased funding of PHM investments/ interventions	Value of PHM interventions funded divided by total budget for the sector	GAP	Percentage	MoA, MoF	DPs, CSOs, NGOs, Private Sector,	At least 50% increase	25 % decrease after 5 years
Reduction rate on Post-Harvest Losses for (at least) the 11 national priority commodities (as detailed in annex 3)	Loss only at critical loss point for priority crops (maize, rice, sorghum, sun-flower, common beans, cassava and tomato	Estimate commodity loss (in ton) points of harvest, transport, storage, processing, packaging and at the sale,	GAP	Percent	MoA (DNFS)	FAO, AGRA,	Reduce commodity losses by at least 50%	Reduce commodity losses by at least 25%

Appendix B2: Outputs indicator

Indicators (output)	Indicator definition	Methodology	Baseline	Unit of measure	Source	Partner (s) Responsible	Target	Milestones
Number of media (Radio, TV, Publications, Internet, and social media) communicated	This relates to programs that promote PHM awareness	Routine counting and documentation of media programs output	GAP	Number	MoA (DNFS)	ANSAF	100% of the intended target	50% for the intended target
Number of training (farmers, extension staff, traders, etc.) by type of training provider (public, private, etc.)	This relates to awareness raising training and meetings	Summation of all training and meetings conducted	GAP	Number	MoA (ARDS)	Private sector	100% of the intended target	50% for the intended target
Number of PHTs related technology tested	This relates to PHTs tested through research and innovation at the local environment.	Number of PHTs tested from targeted one	GAP	Percentage	MoA (DNFS)/	TARI/ MITI	100% of the intended number	50% for the intended number
Number of marketing infrastructures (hard and soft ware) developed and strengthened	This relates to the development of marketing systems	Summation of marketing infrastructures/systems	GAP	Number	MoA (ARDS)	MITI	100% of the intended number	50% for the intended number
Number of storage facilities including storage space	This relates to the improvement of storage facilities	Summation of all storage facilities	GAP	Number	MoA (ARDS)/ MITI	MITI	100% of the intended number	50% for the intended number
Volume of commodities marketed through (WHRS) formal market arrangements	This relates to the marketing of commodities through formal marketing systems	Summation of volumes of all commodities marketed	GAP	Tones	MoA (ARDS)	MITI	At least 50% of commodities marketed through WHRS	30 % increase in the first 5 years
Proportion of research budget allocated to PHM interventions	This relates to the incorporation of PHM interventions in the research programs/plans	Summation of all programs/plans incorporated to PHM	GAP	Number	MoA (ARI)/	MITI	At least one-third of the total budget	25 % in the first 5 years
Number of PHM legislations reviewed	This relates to the review of legislations on PHM	Summation of all reviewed legislations	GAP	Number	MoA (DNFS)	DPP	100% of the intended number	50% for the intended number

Indicators (output)	Indicator definition	Methodology	Baseline	Unit of measure	Source	Partner (s) Responsible	Target	Milestones
Number of PHM related personnel at local government authorities	This relates to capacity building to PHM personnel	Summation of all recruited and trained personnel	GAP	Number	MoA (ARDS)	PO-RALG	At least 20% of all workforce at LGA	10 % increase in the first 5 years
Number of PHM investment barriers identified and resolved	This relates to the identification of PHM barriers and resolutions	Summation of all PHM barriers resolved	GAP	Number	MoA (DNFS)	EMA Unit	100% of the intended number	50% for the intended number
Number of PHM related tools (cold chains, etc.) procured and distributed to the local government authorities	This relates to supporting PHM institutions with working tools	Summation of all working tools procured	GAP	Number	MoA (DNFS)/ MITI	PO-RALG/ MITI	100% of the intended number	50% for the intended number
Annual budget spent on PHM intervention by source (public, private, etc.)	This relates to sourcing and allocating funds to PHM investments.	Sum of funds spent	GAP	TSHs	MoA (DPP, DNFS)/	MoF/ ASLMs	At least 10% increase	5% increase in the first 5 years

