



PEACE, PROSPERITY AND
REGIONAL INTEGRATION

Intergovernmental Authority on Development (IGAD)

IGAD Regional Postharvest Loss Management Strategy (IGAD-PHLMS)

18 July 2021

CONTENTS

1	ACRONYMS	4
2	ACKNOWLEDGEMENT	5
3	EXECUTIVE SUMMARY	6
4	INTRODUCTION	8
4.1	BACKGROUND	8
4.2	STRUCTURE OF THE DOCUMENT	8
4.3	METHODOLOGY OF DEVELOPING THE IGAD PHLM STRATEGY	9
5	RATIONALE FOR THE IGAD PHL MANAGEMENT STRATEGY	9
5.1	FULFILLING THE IGAD VISION	9
5.2	THE EXTENT OF POST-HARVEST LOSSES	10
5.3	CAUSES OF POST-HARVEST LOSSES	11
5.4	IMPACT OF POST-HARVEST LOSSES	12
5.5	FOOD LOSS REDUCTION GOALS	12
6	MEMBER STATES CONSULTATIONS	13
6.1	CONSULTATION METHODOLOGY	13
6.2	AREAS OF IGAD INTERVENTIONS IDENTIFIED BY MEMBER STATES	14
7	IGAD STRATEGIC FRAMEWORK	18
7.1	GUIDING PRINCIPLES	18
7.2	PURPOSE OF THE PHL MANAGEMENT STRATEGY	19
7.3	THE VISION OF THE IGAD PHLM STRATEGY	19
7.4	THE GOAL OF THE PHLM STRATEGY	19
7.5	THE OVERALL OBJECTIVE OF THE IGAD PHLM STRATEGY	19
7.6	STRATEGIC OBJECTIVES, SPECIFIC OBJECTIVES & INTERVENTIONS,	19
7.7	CONCEPTUAL FRAMEWORK OF THE IGAD PHLM STRATEGY	19
8	IGAD STRATEGIC OBJECTIVES (SO)	21
8.1	OVERVIEW	21
8.2	STRATEGIC OBJECTIVE 1: AWARENESS RAISING AND COMMUNICATION ON PHL	22
8.2.1	<i>Proposed Intervention areas for SO1</i>	22
8.3	STRATEGIC OBJECTIVE 2: COORDINATION AND COHERENCE OF PH LOSS REDUCTION	22
8.3.1	<i>Proposed Intervention areas for SO2</i>	23
8.4	STRATEGIC OBJECTIVE 3: PROMOTING PRIVATE SECTOR PARTICIPATION.	23
8.4.1	<i>Proposed Intervention areas for SO3</i>	24
8.5	STRATEGIC OBJECTIVE 4: KNOWLEDGE MANAGEMENT, RESEARCH, DATA COLLECTION AND CAPACITY DEVELOPMENT	25
8.5.1	<i>Proposed Intervention areas for SO4</i>	26
8.6	STRATEGIC OBJECTIVE 5 – CROSSING CUTTING ISSUES – MAINSTREAMING CLIMATE CHANGE, GENDER, AND YOUTH PARTICIPATION.	26
8.6.1	<i>Proposed Intervention areas for SO 5</i>	27
9	RESULTS FRAMEWORK	28
10	MONITORING AND EVALUATION (M&E) FRAMEWORK	30
10.1	OBJECTIVES OF THE IGAD PHLM STRATEGY M&E FRAMEWORK	30
10.2	MONITORING IMPLEMENTATION OF IGAD PHLM STRATEGY.	30
10.3	CRITERIA FOR SELECTING PHLMS INDICATORS	30

10.4	IMPACT INDICATORS	30
10.5	OUTCOME INDICATORS	31
10.6	STRATEGIC OBJECTIVES (OUTPUT) INDICATORS	31
10.7	ESTABLISHING BASELINES AND SETTING TARGETS	33
11	ACTION PLAN	36
11.1	FACTORS FOR SUCCESSFUL IMPLEMENTATION	37
11.2	IMPLEMENTATION TIMEFRAME	37
11.3	PROPOSED INTERVENTION AREAS FOR IMPLEMENTATION	37
12	REFERENCES	40

1 ACRONYMS

APHLIS	African Post-Harvest Losses Information System
AfDB	African Development Bank
AU.	African Union
AUC	African Union Commission
BR	Biennial Report
CAADP	Comprehensive Africa Agriculture Development Programme
CLP	Critical loss point
CoC	Code of Conduct
CSO	Civil Society Organization
DREA	Department of Rural Economy and Agriculture
FAO	Food and Agriculture Organisation
FLI	Food Loss Index
FLW	Food losses and waste
HLPE	High Level Panel of Experts
IGAD	International-governmental Authority on Development
NEPAD	New Partnership for African Development
NPCA	NEPAD Planning and Coordinating Agency
NPHLMS	National Post-harvest loss management Strategy
PH	Post-Harvest
PHL	Post-Harvest Loss
REC	Regional Economic Community
SDGs	Sustainable Development Goals
SO	Strategic Objectives
TZS	Tanzanian Shilling
UN	United Nations
US	United States (of America)
M&E	Monitoring and Evaluation
MEL	Monitoring evaluation and learning
WFP	World Food Program

2 ACKNOWLEDGEMENT

IGAD is grateful to the Food and Agriculture Organization of the United Nations for providing technical and logistical support during the development of this PHLM Strategy. IGAD also expresses sincere appreciation to the Lead Consultant, Mr. Cephaz Taruvinga, and IGAD consultants and various individuals and institutions for the time and effort in contributing to the development of this document. Appreciations also go to all the stakeholders, actors in the supply chains, and government officials of IGAD member states who provided valuable information and support during consultations.

3 EXECUTIVE SUMMARY

1. The Inter-Governmental Authority on Development IGAD Post Harvest Loss Management Strategy is designed to support and facilitate the management of post-harvest losses by IGAD member states. The IGAD member states must implement interventions to achieve their post-harvest loss reduction goals aligned to the Malabo 2025 PHL and the UN SDG 12.3 2020 food-loss and waste-reduction goals.
2. Global food losses and waste represent approximately one-third of the food produced for human consumption. Such a huge problem would indicate that food losses do not merely happen by accident but are instead an integral part of the food system due to how the food system functions technically, culturally, and economically (HLPE. 2014).
3. According to the Uganda third National Development Plan, post-harvest losses in Uganda ranged from 5% to 40% for grains and other staples, 30% to 50% percent for fresh fruits and vegetables (Uganda NPA, 2020). In Kenya, according to APHLIS, cereal losses range from 12% to 17%. For Ethiopia, APHLIS¹ estimates PHL for 2019 between 10% and 18%, with total absolute levels at about 2.9 million mt. For South Sudan, APHLIS estimates PH losses between 10% to 23% for cereals and about **25% for milk**. According to AD Kader of the University of California, PH Technology Centre, the magnitude of post-harvest losses for fruits and vegetables is estimated at between 2% to 25% for developed countries. These losses have an impact on the environment, resources, and food security.
4. In all the IGAD states (Kenya, Uganda, Sudan, South Sudan, Ethiopia, and Djibouti), harvesting, primary handling, and storage were identified as the critical loss points for grains. For milk value chains milking, primary handling and storage were identified as the CLP. In contrast, fruit and vegetable losses are high during on-farm handling, marketing, and distribution. For fisheries which every member state is engaged in, the critical loss points identified are on board handling and storage by fishermen, processing, and packaging, which are the responsibility of fish processors and during trading and distribution, which are the responsibility of the product trader. (FAO, 2017)
5. Generally, in all countries, the leading causes of PH losses identified were poor infrastructures like roads and marketing sheds, inadequate equipment for commodity handling and processing, lack of or poor implementation of grades and standards regimes, and lack of PHL policy awareness by senior public officials expected to make investment and operational decisions. The management and governance issues identified as causes of PHL include lack of skills in data collection and PHL research, incoherent trading policies causing delays at the borders, and grades and standards that are not harmonized, resulting in rejected exports. For instance, 600 000 mt. of maize shipped from Uganda to Kenya was rejected due to aflatoxin contamination. This loss of food and the associated costs could have been avoided if grades and standards were harmonized within the IGAD region.
6. Ethiopia identified the lack of harmonized and standardized PHL data collection methods. As a result, researchers and analysts use different methods of PHL measurement and data collection, making it difficult to make comparisons and monitor progress in reducing PH losses to achieve the Malabo and UN food loss and waste reduction targets.
7. Most of the issues submitted by national consultants for adoption and implementation by the IGAD secretariat should be handled at the country level. Although the issues are common to all the countries in terms of occurrence and effect, they do not need regional coordination or support since they infringe on the sovereignty of member states and relate to different types of food systems. Examples of such issues include providing marketing and handling facilities, linking farmers to markets, providing technology, and community-based post-harvest enterprises. These are value chain technical issues that

¹ <https://www.aphlis.net/en/page/4/how-aphlis-estimates-loss>

should be handled closer to the value chain. However, the only cross-border issue supporting regional value chains identified is harmonizing grades and standards.

8. The guiding principles used to develop the Strategy include subsidiarity, additionality, complementarity, and proportionality. These principles determine the relationship and engagement between member states, Regional Economic Communities (RECs), and the African Union (AU)
9. The regional interventions that have been proposed are deemed complementary to national programs, and the actions are expected not to exceed that which is necessary to achieve the objectives of the Strategy without imposing on Member States rules that are too stringent or efforts that are too great relative to those that would be reasonable or effective. This aligns with the guiding principles of proportionality and complementarity, which guide the relationships between the African Union, RECs, and the member states.
10. Based on the guiding principles and the mandate of IGAD in overseeing the implementation of the Malabo Commitments, the overall objective of the IGAD Post-harvest Management Strategy is *to support IGAD member states to improve food and nutrition security through implementing PHL reduction interventions in line with the AU. Malabo Commitments on post-harvest loss reduction and the UN SDG 12.3 on food loss and waste reduction targets.*
11. The five strategic objectives identified that will be implemented at the IGAD level to enable the achievement of the overall objective of the IGAD PHL Strategy are the following:
 - a. Raising PHL policy awareness and communication to encourage implementation.
 - b. Coordination and coherence of PHL reduction activities.
 - c. Promoting private sector participation.
 - d. Knowledge management and capacity development in PHL management.
 - e. Adaptive research, data collection, and PHL measurement.

Each of the IGAD Strategic Objectives has a set of interventions to achieve the desired outputs.

12. Interventions at the IGAD level that will be implemented to achieve the objective of PHL awareness raising and policy communication are developing an IGAD-wide PHL Awareness and Communication Strategy, convening regional events, and consultations to elevate PHL reduction high on the regional agenda. These awareness interventions are expected to stimulate debate and lead to behavior change which is a low-cost way of reducing food losses and waste.
13. The strategic objective on improved coordination and coherence of PHL management will be achieved through establishing an IGAD regional PHLM technical platform, support member states in developing Malabo aligned PHLM strategies, support the mainstreaming of PHL reduction in food systems and mainstreaming PHM into existing regional early warning systems to effectively respond to emergencies.
14. The promotion of private sector engagement has been identified as a critical objective in reducing post-harvest losses in the IGAD region. To achieve this strategic objective, three interventions are proposed: facilitate the creation of public-private partnerships arrangements for effective PHL reduction, strengthen the operation of a regional commodity trading platform like the EAGC and support establishing a financing facility to support private sector participation in PHL management. The participation of the private sector can be a game-changer in efforts to reducing post-harvest losses at scale.
15. The strategic objective on knowledge management and capacity development will be achieved by establishing a regional post-harvest management knowledge repository, developing a regional PHLM curriculum, developing PHL knowledge products, and improving training skills on PHLM (Training of Trainers). This strategic objective aims to improve access to PHL information and develop PHL management skills.
16. The Strategic Objective on research, data collection and PHL measurement will be achieved by establishing a research facility for adaptive technology research, PHL measurement, data collection,

developing publications, and establishing an M&E system to monitor progress Malabo PHL reduction goal. This SO is to strengthen the PH loss reduction M&E systems.

17. Cross-cutting issues are also considered to support the reduction of post-harvest losses by IGAD member states. The cross-cutting issues that countries should mainstream in post-harvest loss reduction are climate change mitigation, gender mainstreaming, and youth participation in post-harvest loss reduction and developing and implementing policies that support employment creation youth.
18. To monitor and evaluate the implementation of the proposed interventions to achieve the Strategic Objectives, indicators on the interventions and deliverables are also proposed and have been included in the M&E framework. The PHL indicators are aligned to the UN SDG12.3 and the Malabo Commitment 3b on food loss and waste reduction. (SO5)

4 INTRODUCTION

4.1 Background

1. Post-harvest losses contribute to food and nutrition insecurity in Africa and addressing the problem in a way that has an impact and is sustainable requires targeted action. According to the World Bank 2011 Missing Food report, the value of food losses in Sub-Saharan Africa amounts to about US\$4 billion. This value exceeded the value of total food aid received in the region in the decade 1998-2008, and it equates to the value of cereal imports to SSA in the period 2000-2007. This is also equivalent to the annual calorific requirements for at least 48 million people (World Bank, 2011).
2. The Malabo PHL reduction goal is a resolution under the Malabo Commitment for Ending Hunger in Africa by 2025 by the African Union Heads of States and Governments in Malabo in June 2014. Commitment 3b target: *to halve the current levels of Post-Harvest Losses by the year 2025.*
3. SDG 12 of the UN 2030 Agenda for Sustainable Development is intended to ensure sustainable consumption and production patterns. Specifically, SDG 12.3 aims, among other actions, *to halve per capita global food waste at the retail and consumer levels and reduce food losses along production and supply chains, including post-harvest losses (PHL) by 2030.*
4. To ensure that the continental PHL reduction target of 2025 is achieved, the African Union mandated member states to develop Malabo-aligned PHL targets and strategies to achieve the Malabo goals. The PH loss targets are to be achieved by reducing losses for five national priority commodities selected for this purpose. Each member state reports on progress at the Biennial Review (BR) event held every two years. So far, two biennium review events (2018 and 2020) have been held at the African Union.
5. The African Union PHM Strategy developed in 2018 aims *to effectively guide and coordinate post-harvest loss reduction initiatives at the regional and national levels to reduce post-harvest losses in line with the Malabo Declaration PHL goal.* The IGAD PHL strategy will contribute to implementing the AU PHM Strategy by supporting IGAD member states' PHL reduction initiatives aligned to the Malabo PHL goal.
6. This IGAD Post-harvest Loss reduction strategy is designed to support the management of post-harvest losses in the IGAD region through implementing and coordinating policies, investments, processes, regulations, and regional trade activities that require intervention and coordination at the regional level. Thus, the IGAD PHL Management Strategy is aligned to the AU Post-Harvest Management Strategy developed in 2018 by the African Union.

4.2 Structure of the document

1. The document is structured into twelve parts, starting from Section 3 of the document. Section 3 is the Executive Summary. Section 4 introduces and deals with background information on the strategy document and explains the methodology used to gather information and develop it. Section 5 deals with the rationale for developing the Strategy and gives an overview of PHL in the IGAD region and the impact of post-harvest losses. The section also discusses the regional and global goals of food loss reduction. Section 6 discusses the consultative process in the member states, the observations noted, and the recommended regional policy interventions.
2. Section 7 is about the strategic framework, and it first deals with the guiding principles and the purpose of the Strategy. The section also deals with the results framework, which includes the strategic goal, objectives, and the regional strategic areas identified in the IGAD states. Section 8 focuses on the

proposed strategic interventions to be implemented at the IGAD level, and Section 9 deals with the action plan, and finally Section 10 is the M & E framework.

4.3 Methodology of developing the IGAD PHLM Strategy

1. A practical, implementable, and acceptable Strategy is developed through a consultative process. This process calls for a participatory development approach that involves various stakeholders, including policymakers and value chain actors (direct & indirect). Thus, the level of consultation and the subsequent buy-in by policymakers can determine how successful the strategy will achieve its objectives.
2. National consultants in the IGAD member states were engaged to undertake the following tasks:
 - Carry out a desk review of key documents on current and past policies and strategies on production, post-harvest loss management, agricultural marketing, and trading of priority commodities in the IGAD member states.
 - Develop questions to guide national consultants on inquiries to determine the extent, impacts, and causes of post-harvest losses. National consultant collected information from stakeholders to understand the micro, meso, and macro-PH status of target value chains.
 - Collect information on 5 national priority commodities and analyze their value chain structures to identify critical loss points, micro, meso, and macro causes of losses and the associated solutions. Carry out a value chain analysis to identify policies, investments, processes, regulations, and regional trade and cross-border activities that require regional cooperation or intervention
 - Convene validation meetings and online reviews with experts on the proposed post-harvest policies and strategies.
3. The information collected by the national consultants was consolidated and synthesized to enable the selection of policies, regulations, programs, and actions that might be implemented or coordinated at the regional level in support of post-harvest loss reduction in the IGAD member states.
4. The covid 19 pandemics affected national consultations. During consultations, the main challenge was the lack of movement because of restrictions to limit the spread of Covid 19. The restrictions on the movement made it difficult to access key informants and value chain activity areas where information on losses and their causes could be obtained. However, to address the lack of movement, the study team made more use of desk reviews, remote telephone, and email inquiries. In addition, it made use of the consultants' technical understanding of the subject matter.

5 RATIONALE FOR THE IGAD PHL MANAGEMENT STRATEGY

5.1 Fulfilling the IGAD vision

1. The founding leaders of IGAD were motivated by a vision where the region's people would develop a regional identity, live in peace, and enjoy a safe environment alleviating poverty through appropriate and effective sustainable development programs. (IGAD Strategy, 2016).
2. The IGAD Secretariat, as the executive body of the Authority, was given the mandate to achieve the IGAD vision through cooperation and development in three priority areas of food security and environmental protection. The three priority areas are - economic cooperation and regional integration, social development, and peace and security (IGAD Strategy, 2016). Developing the IGAD PHL Management Strategy is part of efforts to achieve the priority area of food security and environmental protection.
3. The IGAD PHL Management Strategy will help deliver on the IGAD food security objective by supporting, facilitating, and enhancing cooperation among member states to reduce post-harvest losses. Broadly, this action is for the mutual benefit of all states through regional cooperation and integration that add

value to member states' efforts in achieving peace, security, and prosperity. The PHLM strategy is also in line with one of the outputs of the IGAD Regional Agricultural Investment plan (IGAD RAIP) which is to have clear instruments and institutional arrangements geared to the implementation of the CAADP results framework that correspond to the existing capacity of the IGAD secretariat.

5.2 The extent of post-harvest losses

1. FAO's post-harvest loss estimates indicate that about 14% of the total food produced in the world is lost between farm and up to, but excluding, retail. Also, FAO estimates PH losses for Sub-Saharan Africa at the same level as global PH losses of 14%. (SOFA 2019). According to APHLIS, up to 50% of crop production may be lost in sub-Saharan Africa before the product reaches consumers. With an estimated value of US\$4 billion, these losses threaten the food security and livelihoods of millions of people (FAO 2011)
2. Although national consultants supporting the development of the IGAD strategy submitted information on PHL losses, however, due to lack of PHL data standardization, the information submitted was not consistent in its format since some countries submitted aggregate data. In contrast, others submitted information disaggregated by crop sectors. Also, the sources of information were varied, highlighting the need to standardize PHL measurement and reporting.
3. Based on national consultations and literature reviews, Uganda's post-harvest losses range from 30 to 40 percent for grains and other staples and 30 to 80 percent for fresh fruits and vegetables (NPA, 2020). These levels indicate an increase in PHL because, before 2017, these losses were estimated in the range of 10-20% for cereals and legumes, 20-30% for semi-perishable crops like roots and tubers, and over 35% for perishables like fresh fruits and vegetables (Kaaya et al. 2007). According to a 2010 FAO report on PH losses in small-scale fisheries in five Sub-Saharan countries, including Uganda, huge physical and quality losses were found in some supply chains, with quality losses reported to account for more than 70 percent of total losses (FOA 201). Milk losses rise during the wet periods when about 43% of the milk remains on the farm unsold. (Tezira et al. 2005)
4. For Kenya, disaggregated PHL data was not available; however, according to APHLIS, cereal losses range from 12% to 17%. Thus, quality losses due to aflatoxin contamination are significant, resulting in substantial maize being destroyed or channelled to non-food uses.
5. In Ethiopia, AGRA estimates losses to be between 10% to 50% for all crops. For cereals only, APHLIS estimates post-harvest losses for 2019 to be between 10% and 18%, with total absolute levels at about 2.9 million mt. Milk losses in Ethiopia constitute a significant problem (Lore et al.,2005). The three critical loss points for milk identified in Ethiopia were milking 39%, transporting 12%, and wholesaling 12%. In addition, according to the study by Solomon and Mekonen (2017), the physical fish spoilage in some Ethiopian water bodies reaches 46.5%.
6. APHLIS estimates post-harvest losses between 10% to 23% for cereals and about 25% for milk in South Sudan. However, figures for other sectors like fruit and vegetables and roots and tubers were not available. This lack of PHL data demonstrates challenges in data collection and reporting. Therefore, this Strategy is also designed to address this shot coming in data.
7. According to the University of California Post-harvest Technology Centre, the magnitude of post-harvest losses for fruits and vegetables is estimated between 2 to 25% for developed countries and 20 to 50% for developing countries. However, the actual level of losses for a country depends on the commodity, cultivar, handling conditions, and how the market operates.
8. All the IGAD member states where consultations took place, harvesting, primary handling, and storage were common critical loss points for grains, root and tubers, and milk. In contrast, fruit and vegetable losses are high during marketing and distribution.

5.3 Causes of Post-harvest losses

1. The exact causes of food losses vary throughout the world and depend on each country's specific conditions and local situation. In broad terms, food losses are influenced by crop production choices and patterns, internal infrastructure and capacity, supply chain structure, consumer purchasing, and how the food is used. Food losses also vary by product and region. Also, the level of awareness on PHL matters by chain actors and the type of product and region have a bearing on the nature and extent of causes of PH losses
2. In low-income countries, food losses tend to occur upstream at production and post-harvest stages; this is unlike in middle and high-income countries, where food losses tend to take place downstream at distribution and consumption phases
3. In low-income countries, the causes of food losses are mainly financial, managerial, and technical limitations in harvesting, storage, packaging, cooling facilities in difficult climatic conditions, poor infrastructure, inefficient marketing systems, and lack of knowledge (Missing food 2011). One of the general drivers of PHL is the non-use of applicable technology, which is attributed to either lack of awareness of the appropriate technologies or lack of access to these technologies.
4. In the IGAD region, as with most developing countries, the lack of value additions due to the unavailability of processing facilities for over 90% of cash crops produced is a cause of post-harvest losses (Missing food 2011). The lack of packaging and storage infrastructure exacerbates the situation when outputs spikes with no alternative marketing outlets. The situation is made worse because of poorly designed policies, which indirectly cause losses.
5. The covid 19 pandemic also had an impact on post-harvest loss management. According to the WFP 2020 Covid-19 Impact Report, the Covid-19 pandemic affected supply chains with adverse effects on post-harvest systems causing significant food losses in developing countries.
6. The lack of policy coordination negatively impacts food supply chains at the regional level, resulting in bottlenecks at crossing points, as bordering countries apply different commodity grades and standards. The effect of these bottlenecks is the ubiquitous occurrence of food losses along the supply chain, especially upstream.
7. Cross-cutting issues like climate change, gender-sensitive approaches, including the involvement of the youth, how these are addressed and included in PH loss strategic frameworks have an impact on the sustainability of post-harvest loss reduction efforts.
8. Gender relations are a primary factor in the social and economic context that shapes the functioning of food value chains at all levels and influences the division of labor, roles, and responsibilities, and creates disparities in access to and control over resources, services, knowledge, and technologies. (FAO, 2018) Failure to consider gender (including the youth) relations in post-harvest management can negatively impact the sustainability of post-harvest loss reduction measures.
9. Climate change and weather variability are also major causes of post-harvest losses. The climatic zones in Africa are shaped by changing sea surface temperatures, land use, and vegetation patterns (Hoerling et al., 2006).
10. Globally, the main features of climate change that will impact post-harvest systems and cause losses are a rise in global temperatures, more rainfall in some areas associated with increased evaporation, more variable and therefore less predictable weather. (IPCC 2007). The impacts of climate change that cause losses will be on harvesting, drying, primary handling, packaging, storage management, processing, and marketing. These impacts will be felt at household, national, regional, and global levels.

5.4 Impact of Post-Harvest Losses

1. Food losses influence food security and nutrition in three ways. First, they represent a reduction in food availability. Second, they harm food access by consumers since food losses contribute to tightening the food market and food prices. Third, food losses compromise long-term food security and nutrition. They represent a loss and waste of resources for food production and the value addition activities necessary for food to reach consumers sustainably.
2. Economically, avoidable food losses directly and negatively impact the income of both farmers and consumers. Given that many smallholders live on the margins of food insecurity, a reduction in food losses could have an immediate and significant impact on their livelihoods due to a loss of food and income in the home because of reduced quality and quantity of marketable surplus.
3. The APHLIS information system indicates that in Eastern and Southern Africa alone, post-harvest losses for cereals are valued at US\$1.6 billion per year or about 13.5 percent of the total value of grain production (US\$11 billion). These losses have a significant impact on the economies of SSA countries (APHLIS 2020).
4. Within IGAD states, post-harvest losses have also negatively impacted food security, incomes, and the environment. For example, in 2018, about 600,000 mt. of maize valued at about US\$48 million destined for Kenya from Uganda was rejected due to aflatoxin contamination (EAGC 2018). The grain was also confiscated, making it unavailable for other industrial uses. Consuming aflatoxin-contaminated grain causes liver cancer, hepatitis B-Virus and stunting in children.
5. In Uganda, post-harvest losses result from poor quality management, which eventually affects access to better markets, results in revenue loss for different value chain actors, and reduces the country's overall national income. The case of the 600,000 mt. of the Uganda maize that Kenya rejected highlights the problem of moving unsafe food across countries. This quality problem can only be addressed by harmonizing grades and standards within the region.
6. According to the US Department of State (2013) report for Ethiopia, the FAO and WFP crop and food security 2010 assessment mission estimated total post-harvest losses at 2.04 million tons of grain. However, for the same period, import requirements for Ethiopia stood at 1.16 million mt. Therefore, theoretically, had Ethiopia succeeded in reducing its post-harvest losses by 50% in the same year, it would not have imported food grains in 2010. Also, it is worth highlighting that there are considerably more losses from the volume of grain wasted. These losses include the value of inputs used to produce 2.04 million tonnes of the crop, the labor, the amount of water used, land, the resulting biodiversity degradation, and the missed investment opportunities.
7. The disruptions to supply chains across the region and globally due to emergencies and natural disasters have been devastating to food systems. For example, the Covid-19 pandemic, according to the WFP Covid-19 impact report, disrupted supply chains, causing substantial food losses, and putting an additional 130 million people at risk of acute hunger by the end of 2020.

5.5 Food loss reduction goals

1. Reducing food losses is widely seen as an important way to reduce production costs, increase food systems' efficiency, improve food security and nutrition, and contribute towards environmental sustainability. Growing attention to the reduction of food losses is reflected in the Sustainable Development Goals (SDGs). SDG 12.3 calls for *halving per capita global food waste at the retail and consumer levels and reducing food loss along production and supply chains (including post-harvest losses) by 2030*. Reducing food losses also can contribute to other SDGs, including the Zero Hunger goal (SDG 2), which calls for an end to hunger, the achievement of food security and improved nutrition, and the promotion of sustainable agriculture. The expected positive environmental impacts from reducing

food loss and waste would also affect, among others, SDG 6 (sustainable water management), SDG 13 (climate change), SDG 14 (marine resources), SDG 15 (terrestrial ecosystems, forestry, biodiversity), and many other SDGs.

2. At the African continental level and in line with the SDGs, the African Union adopted in 2014 *the Malabo Declaration on Accelerated Agricultural Growth and Transformation for Shared Prosperity and Improved Livelihoods*. In the third Malabo Declaration, the African Union committed *to ending hunger in Africa by 2025*. One of the resolutions to achieve this commitment is *to halve 2015 levels of Post-harvest Losses by the year 2025*.
3. To achieve the regional Malabo PHL reduction target, all AU member states should align their efforts to reduce PHL to the African Union PH loss reduction road map. The alignment process involves developing a National Post-harvest Management Strategy designed to achieve the Malabo 50% PH loss reduction target for five priority commodities. The five priority commodities are the minimum on which a country should focus under the CAADP program.
4. Some countries have designed a national strategy for PHL reduction for all their commodities. Monitoring such a strategy is challenging because it requires many resources and skilled personnel. On the other hand, some countries have not yet developed national PHLM strategies; this confirms a lack of regional coherence and coordination in PH loss reduction efforts.
5. According to the AU 2020 biennium report, the performance of IGAD member states has been disappointing, with only one country (Uganda) on track to achieving its Malabo-aligned PHL target.

Table 1: CADDP Biennium Review Scorecard Performance

Country	PHL CAADP target performance	Policy Reasons for performance
Djibouti	Not on track (0.0)	Lack of PHL policy
Ethiopia	Not on track (0.0)	Lack of implementation
Eritrea	Not on track (0.0)	No data/No PHL policy
Kenya	Not on track (0.2)	Lack of PHL Policy/No data
Somalia	Not on track (0.0)	No data/No PHL policy
Sudan	Not on track (0.0)	Lack of PHL policy
South Sudan	Not on track (0.0)	Lack of PHL policy
Uganda	On track (8.9)	Have PHL policy

6. To help lagging countries be on track, IGAD should develop an M&E system that monitors its members' progress in implementing interventions and monitoring progress to achieve Malabo 2025 and the SDG12.3, 2030 food loss reduction goals.

6 MEMBER STATES CONSULTATIONS

6.1 Consultation methodology

1. The consultations to support the development of the Strategy were initially designed to include field studies and observations, key informant interviews, and desk reviews. However, due to challenges that include restrictions on movement, delays in recruitment of national consultants, and lack of skilled personnel, the consultations were limited to desk reviews, remote inquiries through emails, telephone, and WhatsApp. To guide national consultants in undertaking inquiries and discussions with key informants, guidance notes² were developed.

² https://1drv.ms/u/s!AjSvFzTVhzf_g5dAUy5KE3U6jTlhm?e=LtUdmm

2. Consultations could not occur in Somalia and Eritrea due to the failure to identify appropriately skilled personnel. Under the COVID 19 challenges and the technical limitations, Consultations were carried out in Uganda, Ethiopia, Kenya, Djibouti, Sudan, and South Sudan. The national consultations culminated into a national report³ based on a common structure provided as part of the guidance notes.
3. In the six countries where consultations were made, the process involved developing questions based on the guidance note provided by the international consultant, reviewing key documents, and interviewing key informants. The guidance notes required the national consultants to identify processes, investments, policies, rules, regulations, markets, and cross-border activities that would require regional coordination or intervention to support the management of post-harvest losses in the IGAD region. The criteria for selecting the IGAD level intervention was based on the principles which guide the management of programs and the relationship between REC and member states. The guiding principles are subsidiarity, complementarity, additionality, and proportionality. They are guiding principles are described under the section on Guiding Principles. Resources allowing a cost-benefit analysis should be carried out for all alternative interventions to select the best policy option. However, due to resource challenges and time constraints, the consultants used their technical expertise and best practices to select IGAD level post-harvest reduction interventions. This information was consolidated into a national report, consolidated, analyzed, and synthesized to develop the IGAD PHL Management Strategy.
4. The key informants were drawn from government departments, national and international organizations with stakes in post-harvest systems, including the CAADP personnel. The documents reviewed included policy, strategic frameworks, plans, and programs on agriculture value chain development and post-harvest management. The analysis involved mapping value chain structures of the priority commodities, identifying 2 or 3 critical loss points in the value chains where food losses are likely to be high, and collecting data on the causes and the suggested technical and policy solutions.

6.2 Areas of IGAD interventions identified by member states

1. Most of the areas submitted by national consultants as IGAD intervention relates to activities that can be implemented at the national level. Although the issues raised are essential in managing PH losses, this does not mean that they should be addressed at the regional level. Most of the issues are micro or meso causes of losses like inferior technology, lack of skills, and labor shortage. These issues directly affect an individual country and are not of regional importance. Thus, the issues included in this report are those that affect two or more countries. They have a regional dimension and should be implemented or coordinated by the IGAD regional office.
2. Although some research facilities are available in Ethiopia, research expertise is one of the issues identified that require intervention at the IGAD level. Not all countries have the same challenge. Countries like Kenya and Uganda also have facilities that other countries can use for training. What is required is to identify the PHLM skills gap and remedy this through the existing national colleges.
3. Undertaking adaptive research⁴ on technologies brought into the region from other regions ensures appropriate technology conversion, which meets regional conditions and commodities. Thereby helping ensure local users' access and adopt appropriately modified technologies that suit local conditions.
4. A vital issue observed in Ethiopia is the need to use sound, clean standard bags to minimize losses during transportation. Bag standardization is essential because it allows for proper inventory management, pest control, and seamless market linkages. After all, standard packaging harmonizes commodity handling and distribution across markets and borders.

³ https://1drv.ms/u/s!AjSvFzTVhzf_g5cs8YE4wldEqxrtoQ?e=ls9ueO

⁴ Adaptive research also known as on farm research, is conducted to validate, modify or calibrate a new technology to suit local circumstances.

5. Uganda identified the need to assist the IGAD Member States in building climate-resilient regional food systems. The aim would be to enhance the resilience of livelihoods and production systems to climate variability and other related risks. Developing infrastructure to aid transportation/movement of foodstuffs within the region would go a long way to support regional food systems. This could include constructing a road and railway system connecting the IGAD Member States with handling and storage systems at crucial nodes. The objective of such a system is to reduce delays and lower transport costs which are key drivers of food losses.
6. Regional actions identified for South Sudan are to design a National Post-Harvest Loss Management Strategy, for IGAD to set up a mechanism for monitoring fish harvesting and storage and establish a college for Post-Harvest Loss Management on fish. Also, South Sudan requires IGAD to coordinate efforts to harmonize standards for regional trade to address tariff and non-tariff barriers. The call for IGAD to support harmonizing standards is plausible since standardization facilitates trade within the region and ensures that delays at border posts are minimized.
7. Sudan calls for IGAD to set up what it terms a joint research and capacity-building institution in Sudan - "PHL Reduction Institute." Such an institute is needed because the country lacks PHL research and training facilities. Although the need is for the nation, setting up a regional PHL training college benefits the whole region.
8. Sudan would like IGAD to oversee the harmonizing of labor employment across borders during harvesting time. Due to the shortage of labor, especially at harvest time, there is a need to allow the movement of short-term labor between countries. Migrant workers from neighboring countries can cover the perennial shortage of labor during harvesting in Sudan. Sorghum and sesame are labor-intensive crops that would benefit if the movement of labor is regularised. Most harvest losses are due to unharvested grain remaining in the field. Migrant labor from Ethiopia and South Sudan can fill the harvesting labor gap.
9. Sudan also proposed establishing a Regional PH Management Committee to oversee the implementation of the IGAD Strategy. Although the proposal is for the committee to include all key stakeholders and actors, including all and sundry, such a committee will be unnecessarily big and costly. Yet, the activities are narrow and should cost less.
10. Due to a lack of reliable PHL data, Kenya proposed that IGAD support member states in generating accurate PHL data. The lack of data is attributed to the lack of resources to collect reliable and replicable data faced by most SSA countries, including Kenya. The lack of resources for data collection should benefit from a regional initiative on capacity building and data collection.
11. Kenya also proposed a regional platform to monitor progress in reducing PHL and experience-sharing. The regional (IGAD) platform that focuses on the Postharvest Loss Reduction could help member countries closely monitor the UN and AU PHL targets. Such a platform can also be a forum for awareness creation and sensitization of policymakers on the key issues relating to PH loss management.
12. The importance of developing PHL management capacity was also identified. The proposed solution at the regional level is the setting up of a PHL Centre of Excellence for training and research on post-harvest loss reduction. Such a center of excellence can be fashioned on similar lines like NEPAD – BECA. The BecA-ILRI Hub is a shared agricultural research and biosciences platform to increase access to affordable, world-class research facilities.
13. The fourth proposal from Kenya was for IGAD to oversee the implementation of agreements supporting intraregional trade and harmonizing grades and standards. Harmonized grades and standards can reduce post-harvest loss by reducing delays at the country's borders. There is also a need for reciprocal or equivalence agreements on standards and certification systems in the region to avoid unnecessary trade barriers.

14. Findings from Djibouti were that the government should also invest in generating PHL data to encourage investment by the private sector. The private sector requires data on PHL technology gaps and critical loss points and causes of losses for investment decisions.
15. The livestock value chain also experiences losses, and the main critical loss points in developing countries are the transport and storage stages which cover the entire distribution process. Therefore, adequate cold storage (including, for example, freezing of meat) is crucial to prevent food losses and preserve quality at each step of the food supply chain.
16. Transportation of livestock is stressful and injurious, leading to poor animal welfare and production loss. A case study in Ghana indicated that more than 16 percent of expected income is lost due to death and sickness or cattle injuries during transport from farm to cattle market and abattoir (Frimpong et al., 2012). A similar case study in central Ethiopia (Bulitta, Gebresenbet, and Bosona, 2012) indicated that over 45 percent of animals were affected (either stolen, died, or injured) during cattle transport from the farm to the central market.
17. Cross-cutting issues like climate change, gender, and the youth should be considered if post-harvest losses are to be substantially and sustainably reduced. Interventions proposed to limit the impact of climate change includes post-harvest management within the ambit of the regional early warning system. This will allow disaster and shock signals to trigger remedial post-harvest action to mitigate the impact of climate change events. Interventions proposed to consider gender-related issues at the regional level are for IGAD to support or encourage the adoption of technologies and policies that ameliorate drudgery work and develop and implement policies that enable women to take up decision-making roles within the post-harvest system.
18. Another crossing-cutting issue that should be addressed at the regional level that can support efforts to reduce post-harvest losses in the long term is youth involvement. This can be achieved through developing policies that encourage youth participation in post-harvest loss reduction activities. At the regional level, these could include offering PH study scholarships, supporting PH innovation through encouraging and financing post-harvest start-ups and technology development competitions.
19. Table 2 is a summary of areas of interventions identified by national consultants to include in the IGAD Strategy. However, based on the guiding principles, not all interventions should be implemented at the IGAD level.

Table 2: Summary of proposed regional interventions and activities

1. To summarise interventions and processes for regional action proposed by national consultations

Improve governance	Improve PH management
<ul style="list-style-type: none"> ● To commission events, hold meetings, and develop publications on PHLM technical and policy issues to influence decision-makers on the importance of PHLM in improving food security. ● To make effective use of the media to communicate issues related to post-harvest losses and their management. ● To ensure PHL interventions are mainstreamed in all food systems in the region to scale up PHL reduction efforts significantly. ● Incorporate PHLM into the existing early warning system to mitigate the impact of shocks on post-harvest systems. ● To strengthen the participation and involvement of the private sector in post-harvest loss management to broaden the number of actors undertaking post-harvest loss reduction activities. ● Encourage member states to develop policies and interventions that ameliorate drudgery work and ensure the participation of women and the youth in decision making in post-harvest management ● Develop and support programs that encourage youth participation and employment in post-harvest interventions ● To reduce PHLM investment risk for private entities by establishing a PHLM financing facility for private entities involved in cross-border commodity movement. ● Harmonization of legal frameworks for trade facilitation (trade, health, food safety, standardization of quality etc.) ● Development of regional legal frameworks for various sectors that influence PHM ● Enhancing regional investments in PHM infrastructures (such as regional grain reserves, market facilities, information systems and digitalisation of PHM process) to enhance PHM ● Development of sustainable regional business models that attracts the private sector investment ● To create public-private partnership arrangements for effective PHL reduction through creating collaborative arrangements ● Develop climate change post-harvest early warning systems to mitigate the impact of climate change on harvest management. 	<ul style="list-style-type: none"> ● Raising awareness on PHLM at the value chain and policy levels to trigger debate and action on post-harvest loss reduction in the region. ● The need to develop and implement a regional PHL awareness and communication strategy whose objective is to keep the food loss and waste debate on the public and policy agenda ● To make regional supply chains more efficient, there is a need to ensure that regional trading platforms operate effectively within the regional bloc. ● To ensure there is proper coordination and coherence in post-harvest loss management in the region through putting place IGAD region standards ● Establish an IGAD regional PHM technical platform to oversee the region's implementation and monitoring of PHLM activities. ● Ensure each member state develops and implements a PHLM Strategy aligned to the Malabo post-harvest reduction 2025 goal ● Ensure PHLM information is available and accessible to stakeholders by generating and disseminating post-harvest loss management information and data. ● Improve PHLM curricula training through the development of PHLM knowledge modules and ensuring the training material is adopted by agricultural tertiary colleges, vocational and extension training colleges (ATVET) ● Develop the capacity of PHLM training at agricultural training colleges to build the critical mass of PHLM trainers. ● Develop research capacity on PHL measurement, digitalised data collection and undertake adaptive research to validate, modify, and calibrate new PHLM technology to suit local conditions. ● Support establishing regional agro-processing facilities for selected value chains ● Enhancing market linkages and market infrastructures for regional value chains ● Enhancing the development of regional value chains through PPPs

7 IGAD STRATEGIC FRAMEWORK

7.1 Guiding principles

1. The IGAD Vision and Mission are a critical guiding principle in developing and implementing the IGAD PHM strategy. The founding leaders of IGAD were motivated by a vision where the region's people would develop a regional identity, live in peace, and enjoy a safe environment alleviating poverty through appropriate and effective sustainable development programs. The IGAD Secretariat, as the executive body of the Authority, was given the mandate to achieve this goal through the following Vision and Mission.
 - **Vision:** *IGAD to be the premier Regional Economic Community (REC) for achieving peace and sustainable development in the region.*
 - **Mission:** *Promote regional cooperation and integration to add value to Member States' efforts in achieving peace, security, and prosperity.*
2. One of the Comprehensive Africa Agriculture Development Programme (CAADP) fundamental principles embraced across the continent is that regional complementarities and cooperation boost growth. Another fundamental principle of CAADP is assigning responsibility for program implementation to country-level coordination under the designated Regional Economic Community (RECs), and facilitation is placed under the relevant organs such as the NPCA Secretariat. Therefore, value addition at each level, from national to continental, is a crucial success factor to any strategy. To this end, the following guiding principles were used in the formulation of this IGAD Post-Harvest Loss Management Strategy:
 - a) **Subsidiarity** - programs and activities are designed and implemented at levels where maximum effectiveness and impact are achieved.
 - b) **Additionality** – only regional programs that add value to regional efforts and integration should be implemented at the regional level.
 - c) **Complementarity** – regional programs or interventions should be complementary to national programs or efforts.
 - d) **Proportionality** - action at the regional level should not exceed what is necessary to achieve the Strategy's objectives.
3. As espoused by the upcoming FAO Code of Conduct on FLW, the overarching guiding principle is that prevention, reduction, and management of food loss and waste should be conducted in ways that contribute to sustainable development. That is, development must be sustainable in all three dimensions - social, economic, and environmental; and meets the needs of the present without compromising the ability of future generations to meet their own needs.
4. The effectiveness of PH loss reduction interventions depends on the specific context, including not only economic, social (e.g., cultural aspects, gender), technical, and business considerations, but also broader considerations related to the overall enabling environment, including the availability of facilitating services and infrastructure, strong institutions, and macroeconomic aspects.
5. There is a need to provide a strategic and integrated framework for regional cooperation to reduce post-harvest food losses. The IGAD Secretariat, with technical support from FAO, has facilitated the development of the PHLM Strategy as part of its mandate. The Strategy is based on best knowledge at the time of conceptualization and writing and past and current work on post-harvest loss reduction.
6. The Strategy has been developed in consultation with member states, development partners, and non-state actors. It is a concerted effort by many stakeholders and is intended to guide the IGAD

secretariat in areas to focus on in supporting IGAD member states in their endeavor to address post-harvest losses

7.2 Purpose of the PHL Management Strategy

1. The purpose of the IGAD PH Management Strategy is to define commonly agreed processes, investments, policies, rules, regulations, market and trade issues, including cross-border activities that need action by the IGAD Secretariate to support efforts to reduce post-harvest losses.

7.3 The vision of the IGAD PHLM Strategy

1. The proposed vision of the IGAD Post-Harvest Loss Management Strategy is ***the enhancement of food and nutrition security through reduced post-harvest losses along food value chains in the IGAD region.***

7.4 The goal of the PHLM Strategy

1. The proposed goal of the IGAD Post-Harvest Loss Management Strategy is: ***to halve (decrease by 50%) the 2015 levels of Post-Harvest Losses by the year 2025.***

7.5 The Overall Objective of the IGAD PHLM Strategy

1. The IGAD Post-harvest Loss Management Strategy's overall objective is ***to support IGAD member states improve food security through implementing IGAD level harmonized PHL reduction interventions in line with the Malabo Declaration on post-harvest loss reduction and SDG 12.3 goal on food loss and waste reduction targets.***

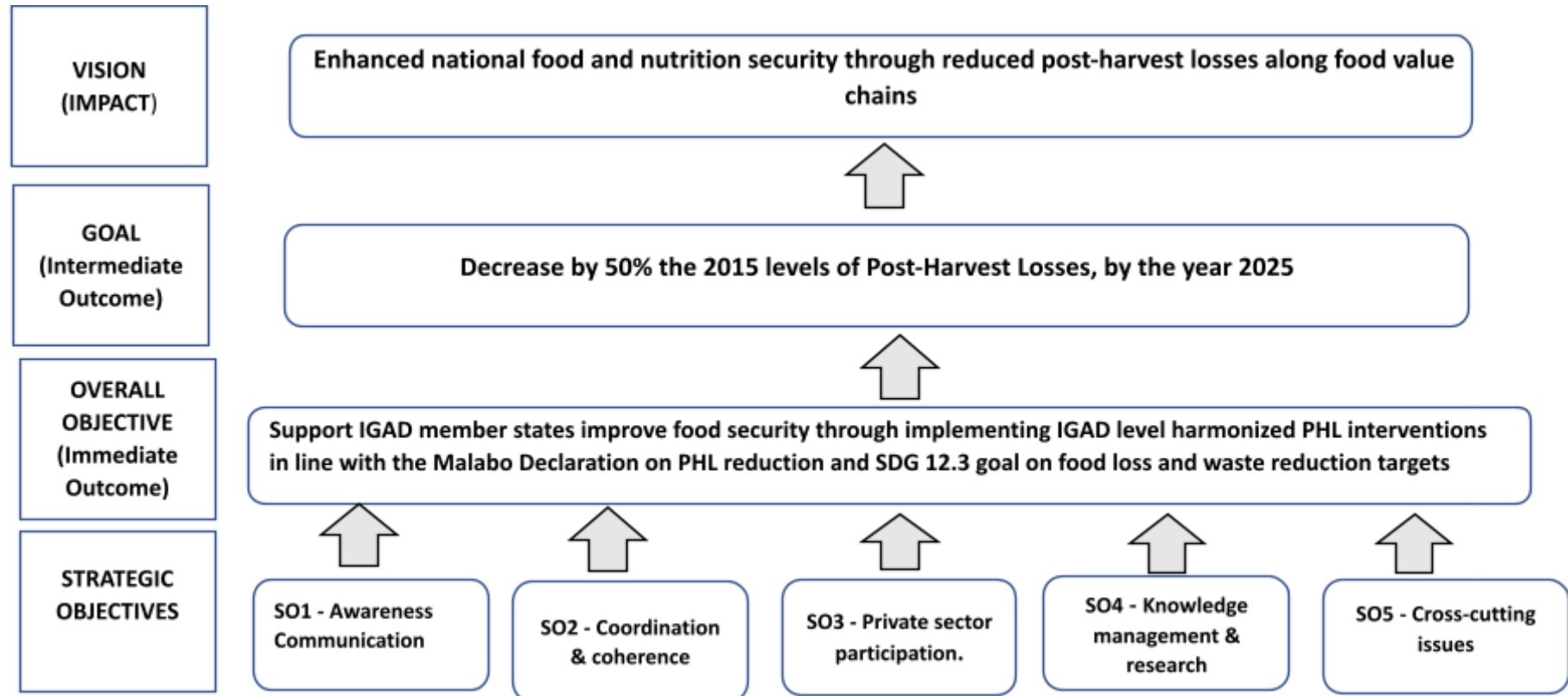
7.6 Strategic objectives, Specific objectives & Interventions,

1. To ensure coherence, clarity and effective implementation and monitoring of regional PHL interventions, the selected interventions and activities were grouped into five Strategic Objective areas or specific objective clusters and then into Strategic Objectives.
2. The Strategic Objectives conceptualized are:
 - Awareness and Communication
 - PHLM Coordination and coherence
 - Private sector participation.
 - Knowledge management research and capacity building
 - Cross-cutting issues – climate change, gender, and the youth

7.7 Conceptual Framework of the IGAD PHLM Strategy

1. The mission, goal, and overall objective of the IGAD PHLM strategy are captured in the conceptual framework Figure 2 below.

Figure 2: Conceptual Framework of the IGAD Post-Harvest Loss Management Strategy



8 IGAD STRATEGIC OBJECTIVES (SO)

8.1 Overview

1. The IGAD PHLM strategy, as captured in the conceptual framework, is anchored on identified five Strategic Objectives, and each Strategic Objective will be achieved through a set of specific objectives. In turn, the Specific Objectives will be achieved through a menu of interventions that have been identified. The interventions can vary depending on circumstances and the effectiveness of an intervention in comparison to an alternative. For instance, the Specific Objective – *Effective Use of the media* can be achieved through different activities or a single activity depending on available communication channels. This can be achieved through developing the content and deploying it through radio or television, or both and other forms of the media. A cost-benefit analysis can be used to determine the most viable option.
2. In essence, although the Strategic objectives remain the same, detailed implementation arrangements or even interventions can change. In this regard, this means that the Strategy is deemed a living document whose interventions can be modified to suit obtaining circumstances. Also, the availability of resources might determine the timing and level of implementation.
3. This section on Strategic Objectives captures the linkages between the Strategic Objective, the Specific Objectives, and the link to the selected interventions. Table 3 below captures the relationships.

Table 3: Strategic Objectives, specific objectives, and interventions

Strategic Objective	Specific objective
Awareness and communicate	<ul style="list-style-type: none"> • Develop and implement a regional PHL awareness and communication strategy • Commission events and meetings to keep PHL on the regional agenda • Effective use of the media to raise awareness on PHL
Coordination and coherence of PHLM efforts	<ul style="list-style-type: none"> • Establish an IGAD regional PHM technical platform • Support member states in developing Malabo-aligned PHLM strategies. • Support the mainstreaming of PHL reduction in food systems • Develop and harmonize legal frameworks for PHL reduction and trade facilitation • Enhance market linkages and market infrastructures for regional value chains • Incorporate PHLM into early warning system to mitigate the impact of natural & human-made shocks on PHL.
Private sector participation in PHLM	<ul style="list-style-type: none"> • Facilitate the creation of public-private partnership arrangements for significant PHL reduction. • Support the operation of a regional trading platform for improved commodity trading across borders. • Facilitate the establishment of a PHLM financing facility for improved post-harvest loss reduction. • Develop business models that take advantage of regional comparative advantage • Promote establishing regional agro-processing facilities for selected value chains
Knowledge management, research, and capacity development	<ul style="list-style-type: none"> • Establish a PHLM knowledge and information repository. • Support the development of PHLM curricula and adoption of the same colleges • Improve PHL management capacity along regional value chains. • Support efforts to improve PHLM Training skills • Support the establishment of a PHL research facility for adaptive research on PH technologies and innovations. • Support PHL studies on Malabo priority commodities to update PHL data • Form alliances on data collection and PHL measurement • Establish an M&E system to monitor progress in achieving Malabo PHL reduction goals
Cross cutting issues	<ul style="list-style-type: none"> • Mitigate the impact of climate change in PH management • Encourage gender mainstreaming in post-harvest loss management • Encourage youth participation in post-harvest management

8.2 Strategic Objective 1: Awareness raising and communication on PHL

1. The lack of awareness on post-harvest loss management at both the value chain and policy level, combined with inadequate communication on the importance of post-harvest loss reduction, has led to the failure to integrate the PHLM topic into relevant policies and strategies. This has, in turn, resulted in inadequate investment in solutions that reduce post-harvest losses. (Bellagio Statement 2018) Government policies do not sufficiently address PH losses, and lack of awareness was identified as one reason for the lack of PHL investment. To address this, there is a need to create PHL awareness among policymakers.
2. Observations in Ethiopia show a lack of awareness of the impact and implications of post-harvest losses on food and nutrition security at the policy level. The lack of awareness in Ethiopia is attributed to a lack of information on the impact of PHL. The APHLIS system provides data on the financial and nutritional impact of PHL. However, the demand for PHL data is low. Also, this can be attributed to a lack of awareness on the impact of PHL on the national budget.
3. To raise awareness on post-harvest losses, Sudan proposes establishing PHL reduction platforms at regional and national levels with a key mandate to raise awareness on the extent, impact, and causes of post-harvest losses.
4. The African Union PHLM Strategy notes that sensitization and awareness of the importance of post-harvest losses are essential if implementers are sufficiently disposed to implement the Strategy. Therefore, the successful implementation of PHL programs lies in being aware of the issues and the readiness of stakeholders to implement such PHL management strategies.

8.2.1 Proposed Intervention areas for SO1

1. To communicate and raise awareness on the extent, causes, impact, and solutions on PHL in IGAD region, the following interventions were identified for implementation.
 - a. Develop and implement a regional PHLM communication and awareness strategy
 - b. Commission events on PHLM
 - Develop PHLM content for awareness and communication
 - Convene policy dialogues to raise the profile of PHLM
 - c. Make effective use of media to create awareness on PHLM

8.3 Strategic Objective 2: Coordination and coherence of PH loss management

1. There is an urgent need for improved coordination and coherence in implementing post-harvest loss management policies. Member states, companies, and organizations act in isolation instead of harnessing their comparative advantages and fostering synergies between initiatives. There is insufficient sharing and learning together, and countries have trading policies and regulations that constrain the movement of commodities across borders, causing delays and, thereby, food losses. The FAO Code of Conduct on FLW calls for Regional Economic Communities like IGAD and member states to identify and strengthen linkages to achieve regional food loss and waste reduction targets.
2. States should promote alignment, coherence, and coordination across policies, institutions, and legislation that are related to and have an impact on food losses, which include those addressing the following issues in the plant and animal production, fisheries, and aquaculture sectors: research, gender equality, energy, nutrition, climate change, rural development, investment, food safety, food security, emergency response, and waste disposal, among other things. (FAO Code of Conduct 2020)
3. Ethiopia proposed establishing a regional multi-sectoral post-harvest management coordination mechanism to facilitate joint implementation, monitoring and evaluation, learning, and knowledge

management systems in both the public and private sectors. These coordination mechanisms should ensure clear roles, responsibilities, and levels of accountability between countries.

4. Uganda called for IGAD to support and facilitate harmonizing commodity quality and packaging standards to reduce delays at border crossings. Different grades and standards between trading countries mean that a consignment will be delayed at the border while the quality and safety standards of the commodity are being checked or confirmed using different standards.
5. Kenya proposed the establishment of a regional platform to monitor progress in reducing post-harvest losses. Such a regional platform will help IGAD member states address any anomalies if they are not on track to achieving their regional PHL reduction targets.
6. The COVID 19 pandemic mitigation measures have disrupted supply chains resulting in huge PH losses because of bottlenecks and gluts on the supply side, necessitating establishing or incorporating PHLM into existing early warning system to mitigate PH losses due to shocks or disasters.
7. To scale up FLW reduction, mainstreaming food loss and waste reduction interventions in food systems or food programming should be a standard operating procedure. Therefore, every entity, organization, or company operating in the food business should be encouraged to include food loss reduction efforts in its food business.

8.3.1 Proposed Intervention areas for SO2

1. To achieve the objective of improved coordination and coherence in the management of PHL in the IGAD region, the following interventions and actions are proposed for implementation:
 - a. Establish an IGAD regional PHM technical platform
 - b. Support member states in developing Malabo-aligned national PHLM strategies.
 - Support the development of national PHLM Strategies
 - Facilitate implementation of national PHLM strategies
 - c. Support the mainstreaming of PHL reduction in regional food systems.
 - Support the development of a PHLM mainstreaming strategy
 - Facilitate implementation of the PHLM mainstreaming strategy
 - d. Develop harmonized legal frameworks for PHL reduction and trade facilitation
 - e. Enhance market linkages and market infrastructures for regional value chains
 - Support the operation of a regional trading platform
 - f. Incorporate PHLM into the existing early warning system to mitigate the impact of shocks on PHL management systems.
2. The results framework and the action plan provide more details on the specific activities and indicators of the interventions and activities to achieve the Strategic Objectives discussed above.

8.4 Strategic Objective 3: Promoting private sector participation.

1. The private sector has generally been excluded in policy formulation, yet it is acknowledged that interventions that impact on PHL are implemented at the firm and individual levels especially value addition. Driven by profits, the value of post-harvest losses should be of interest to the private sector. Therefore, the need to involve the private sector by developing appropriate dialogue mechanisms should be promoted and supported.
2. Private operators along food value chains have an incentive to implement measures to reduce food losses if the financial benefits outweigh the cost. Efforts to reduce food loss and waste involve costs, which rational individuals and entities are willing to bear if the benefit is higher than the cost. By this view, it means that a certain level of food loss is unavoidable. The loss level will depend on the

technology available to suppliers and consumers and the perishability, distribution systems, and consumption patterns for food products. (FAO SOFA 2019)

3. Although reducing food losses may positively impact the company's profits, the financial incentives for a private company to reduce food losses may be weak. Even where the business case for food loss reduction is evident, stakeholders may be unable to implement the necessary actions because of financial constraints and costs due to lack of credit, inadequate infrastructure, and policies that discourage private sector participation.
4. Ensuring the private sector has a role to play and that the infrastructure, institutions, and policies that support private sector activities are in place and coherent is the responsibility of governments and RECs. Public interventions that allow private actors to overcome financial or other barriers that stop them from undertaking food loss reduction decisions can convince private actors that there is a business case for food loss reduction.
5. The Bellagio post-harvest Management Statement⁵ of September 2017 averred that "the size and costs necessary to address the problem of food losses and the scope of needed investments are largely insufficient or unknown for PHLM practices, technologies, and services. This gap of such information hinders the engagement of private sector actors. Besides, appropriate financial products and services tailored for boosting investments in PHLM are mostly absent."
6. Direct engagement between IGAD and the private sector might not be feasible and effective since companies, as citizens of member states are expected to work within their country's jurisdictions. However, there are interventions related to governance, financing, and those that support the implementation of trade agreements which IGAD can undertake through private and public partnership arrangements. Reducing food loss and waste requires private actions complemented by supportive public policies (Flanagan et al. 2019a)
7. Reduction of post-harvest losses calls for a collaborative, multi-stakeholder approach that involves governments, the private sector, CSOs, academia, research institutions, producers, and other relevant stakeholders. These multi-stakeholder platforms should be established at national, regional, and continental levels to ensure the PHL agenda is escalated through the regional and global food systems. Thus, states and regional bodies like the IGAD should facilitate platforms that bring together the private and other relevant actors to identify problems and develop solutions jointly.

8.4.1 Proposed Intervention areas for SO3

1. To achieve the objective of *promoting private sector participation* in PHL management in the IGAD region, the following interventions are proposed for implementation.
 - a. Facilitate the creation of public-private partnership arrangements for significant PHL reduction.
 - b. Support the operation of a regional trading platform for improved commodity trading across borders.
 - c. Develop sustainable regional business models that attract the private sector investment in value addition.
 - d. Facilitate the establishment of a PHLM financing facility for improved post-harvest loss reduction management.
 - e. Promote establishing regional agro-processing facilities for selected value chains
2. Where member states have not established a commodity trading platform, IGAD should facilitate its establishment and support building the necessary capacity to operate and use it.

⁵ [The Bellagio Post-harvest Management Statement \(Bellagio Statement 2017\)](#)

8.5 Strategic Objective 4: Knowledge management, research, data collection and capacity development

1. Findings from national consultations revealed the need to research the extent, impact, and causes of PHL, developing and sharing knowledge on the same, measuring and collecting data and the general lack of capacity in all aspects of post-harvest management loss management.
2. There is a need for capacity development in PHL management tertiary training and extension services for farmers and all actors along commodity value chains if food loss reduction is upscaled. (HLPE 2011). The African Union Post-Harvest Management Strategy, which the IGAD Strategy is aligned to, identified knowledge management as essential in supporting national and regional efforts to reduce post-harvest losses.
3. Knowledge management has been defined as the explicit and systematic management of processes enabling vital individual and collective knowledge resources to be identified, created, stored, shared, and used for the collective benefit of stakeholders. For effective PHL management, training programs should be designed and implemented to develop supply chain management, primary processing, packaging, HACCP systems, food quality and safety management, good handling practices, sorting and grading, transportation, traceability, and storage management.
4. What is vital in knowledge management are the (a) processes to generate, analyze and disseminate usable information; (b) the skills to generate, analyze, and use the information; and (c) the institutional capacities to coordinate and facilitate the generation, analysis, and dissemination of information in a regulated manner that is sound and generally acceptable to most key stakeholders. (CTA 2015)
5. Although countries already undertake PHL management training programs, these are ad-hoc and carried out by development agencies as an activity under a post-harvest project. The University of Nairobi Department of Plant Science & Crop Protection offers a post-harvest technology course under its Horticulture Unit. However, there is a need for an IGAD focused regional training program or curriculum that covers all regional commodity sectors. Also, training is needed to strengthen PHL measurement and the development of solutions to reduce post-harvest losses.
6. When a post-harvest problem seems intractable, the best solution is to adopt foreign technology and adapt it to local conditions. The challenge with this process is that there are no suitable facilities and skills to test these solutions in individual countries. This problem calls for establishing a regional research center to undertake research, specifically adaptive research, since there are technologies on offer that are not suitable for local commodities and environments. The advantage of carrying out adaptive research is that it is cheaper than developing a solution from scratch because IGAD can collaborate with the original developers of the technology. Such collaboration enables learning and eliminates developmental costs since it involves adopting and localizing proven technologies.
7. Apart from modifying technologies, adaptive research also covers evaluating modified technologies from three perspectives which include suitability - how well a product performs its purpose; scalability - how well the product's supply chain effectively reaches consumers; and sustainability - how well the product is used correctly, consistently, and continuously by users over time.
8. Establishing a national research center is very costly because it requires highly skilled personnel and investment in equipment and facilities. To reduce national research costs, IGAD member states have proposed the establishment of a regional research center. The center will serve all IGAD member states, including other African countries. To achieve this, Kenya proposed establishing a Centre of Excellence for research in post-harvest technology and management. The center of excellence could be modeled on the same lines as the NEPAD Biosciences Eastern and Central Africa Network (NEPAD – BecANet).
9. The lack of reliable data on the extent and impact of post-harvest losses has also been identified as one reason policymakers are sluggish on post-harvest loss reduction issues. Data collection and PHL measurement have been identified as critical components that are invariably missing and not

adequately addressed in post-harvest management and food systems programming. The reasons for this are lack of appreciation of the importance of PHL data and the lack of resources, lack of technical skills, and organizational capacities for data collection. To support PHL management, data must be collected consistently, at a relevant geographical scale, and a proper sampling strategy should be implemented at critical points of supply chains.

10. The upcoming FAO Code of Conduct on food loss and waste reduction recommends that where accurate and comprehensive quantitative and qualitative data on food loss and waste are unavailable or cannot be gathered because of resource or other constraints, States, sub-national authorities, the private sector, producer organizations, and other stakeholders should strengthen research in this area, to provide the required information and to guide their food loss reduction decisions, investments and targets. (FAO CoC upcoming)
11. According to APHLIS, the failure by states and many entities to generate PHL baseline data and the lack of simple methods to measure PHL underlines the challenge of collecting official PHL information in Sub-Saharan Africa. These challenges constitute an essential barrier to understanding the reality of food losses (FAO SOF 2019). Where possible, these challenges must be addressed at the highest level possible.
12. Apart from facilitating and supporting data collection methods, measuring post-harvest losses, and M & E harmonization, RECs are responsible for monitoring member states' progress in achieving the African Union and the UN goals of reducing post-harvest losses. As for IGAD, regional monitoring is essential since only one member state was adjudged to be on track to achieve its Malabo PHL goal. Furthermore, in data collection and sharing, nations are encouraged to collaborate because they combine resources and share expertise and output data to benefit member states.

8.5.1 Proposed Intervention areas for SO4

1. To achieve the objective of *Improved knowledge management, research and capacity development*, the following interventions are proposed for implementation.
 - a. Establish a PHLM knowledge and information repository to improve access to information.
 - b. Support the development of PHLM curricula and adoption of same by Agricultural Tertiary Vocational Extension Training colleges (ATVET)
 - Support the development of the PHLM curriculum
 - Support development of knowledge products
 - Facilitate the adoption of the PHLM Curriculum by ATVET
 - c. Improve PHL management capacity along regional value chains.
 - Support efforts to improve PHLM training skills.
 - Support efforts to improve research capacity
 - d. Support the establishment of a PHL research facility for adaptive research on PH technologies and innovations.
 - e. Support PHLM studies, PHLM innovations, and digitalisation
 - f. Form alliances on data collection and PHL measurement
 - g. Establish an M&E system to monitor progress in achieving PHL reduction targets
2. The results framework and the action plan provide more details on the specific activities and indicators of the interventions and activities to achieve the Strategic Objectives discussed above.

8.6 Strategic Objective 5 – Crossing cutting issues – mainstreaming climate change, gender, and youth participation.

1. Like all development interventions, cross-cutting themes of a strategic nature must be considered if post-harvest losses are to be sustainably reduced. These themes include climate change, gender, youth

and including pandemic shocks warning into early warning systems. Mainstreaming these themes is not only morally correct but technically sensible.

2. Climate change trends that are going to affect post-harvest systems in developing countries are - a general increase in temperature; more frequent occurrence of dry spells and droughts; more frequent occurrence of high winds, storms, heavy precipitation events, and flooding; more erratic rainfall; increased rainfall amount and/or duration. These climate change trends are unlikely to occur in isolation from each other or other drivers of change. (Rural Focus 21 2013). Despite the significant uncertainty regarding the scale, type, and interactions of climate change impacts, mitigation, and adaptation activities are needed to avoid the most severe consequences of global warming.
3. Although progress has been made in identifying the direct causes of post-harvest losses and quantifying their magnitude, loss reduction strategies have, in the past, tended to focus on technological solutions, hence overlooking the relevance of socio-economic factors influencing the functioning of the post-harvest systems. Gender relations are a primary factor in the social and economic context that shapes the functioning of food value chains at all levels, influences labor division, roles, and responsibilities, and creates disparities in access to and control over resources, services, knowledge, and technologies. Hence, gender relations impact the overall efficiency of post-harvest systems and consequently on food losses.
4. Nearly 50% of the developing world population is youth and children. According to the 2010 Youth Development Report by DFID–CSO Youth Working Group, there are 1.2 billion 15- to 24-year-olds globally and one billion live in developing countries. (Rural Focus 21 2013). This is often referred to as the ‘youth bulge’ since young people constitute a high and peaking proportion of many populations. The youth bulge represents both a challenge and an opportunity for development. For example, in Uganda, it is estimated that the country then needed to create over 600,000 new jobs per year for the next 12 years – equivalent to the total size of the formal employment sector at present. These large numbers of young people are an opportunity, and an investment and post-harvest loss reduction efforts offers a great employment opportunity for the youth.
5. Youth participation in development has the following benefits:
 - Strengthens young people’s abilities to meet their own subsistence needs;
 - Prevents and reduces vulnerabilities to economic, political, and socially unstable environments.
 - Helps enter target communities and builds up trust and social capital
 - Promotes ownership and sustainability of interventions including post-harvest systems.
6. Post-harvest loss management with its array of modern, traditional, and information technology innovations presents an opportunity to create employment and support efforts to reduce post-harvest losses sustainably.
7. Emergencies, natural disasters, conflicts, and crises such as the COVID-19 pandemic disrupt food supply chains leading to food losses (FAO Draft CoC 2020). The situation is made worse if these emergencies occur in places where post-harvest management capacity is weak, which is the case in most developing regions.

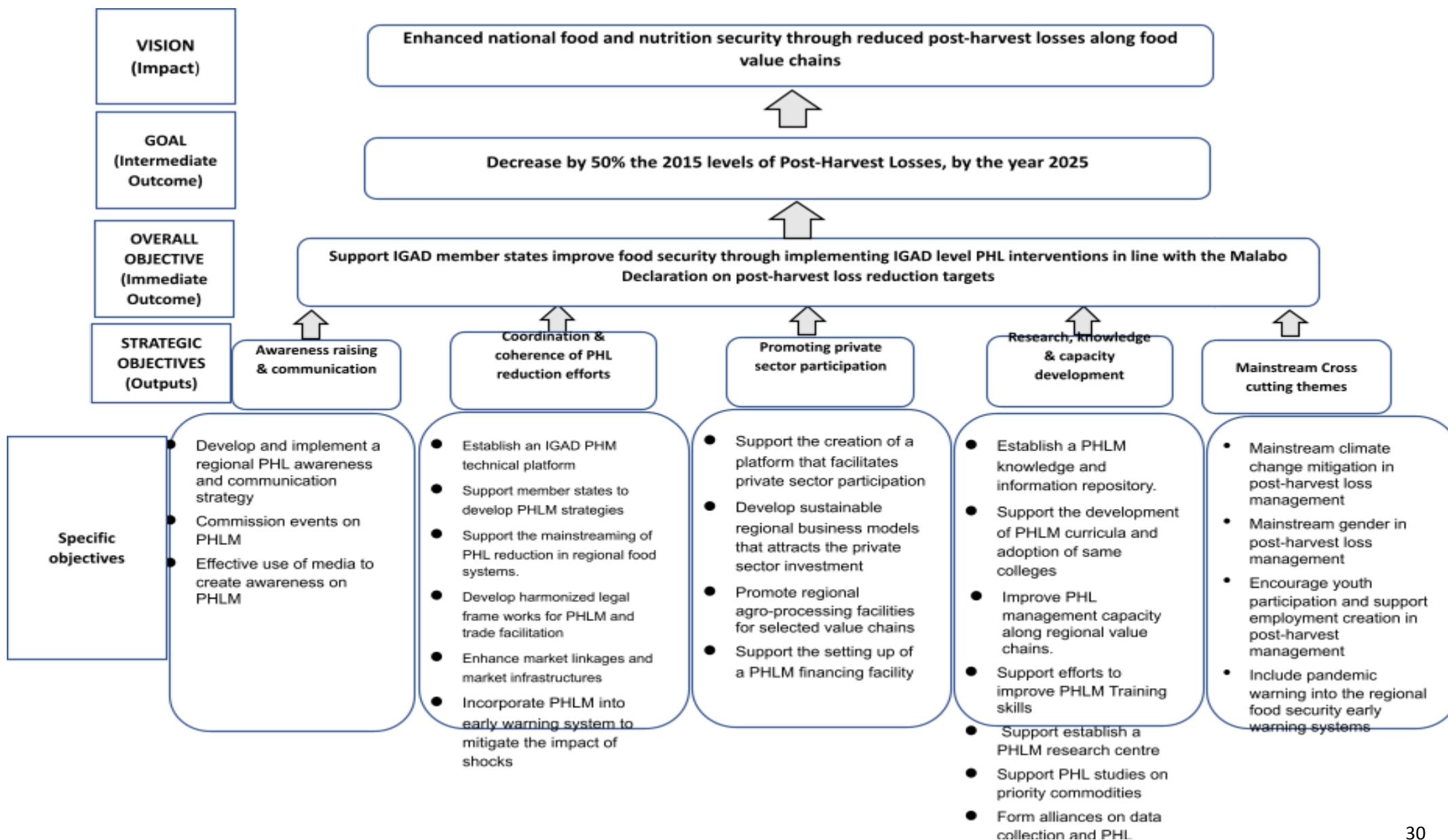
8.6.1 Proposed Intervention areas for SO 5

1. To achieve the Strategic objective of mainstreaming cross-cutting issues of climate change, gender and youth participation, the following interventions are proposed for the IGAD
 - a. Develop and support implementing a strategy to mainstream climate change in post-harvest loss management by member states.
 - b. Develop and support implementing a strategy to mainstream gender and youth participation in post-harvest management by member states.
 - c. Include pandemic warning into the regional food security early warning systems

9 RESULTS FRAMEWORK

1. The Results Framework for the IGAD Post-Harvest Loss Management Strategy is based on the analysis in section 8 above. The Results framework, a tool for planning, monitoring, and evaluation, shows how the proposed interventions and activities logically transform outputs, outcomes, and the impact produced by the IGAD PHLM Strategy. Further details that refer to the Results Framework are given in the M&E Framework of this Strategy. Figure 4 below summarises the analysis discussed in the previous section in the Results Framework for the IGAD Post-Harvest Loss Management Strategy.

Figure 3 Results framework of the IGAD Post-harvest loss management strategy



10 MONITORING AND EVALUATION (M&E) FRAMEWORK

10.1 Objectives of the IGAD PHLM Strategy M&E Framework

1. The objective of the IGAD PHLM Strategy M&E framework is to track the implementation of the PHLM Strategy and monitor the rate of PHL reduction at the REC and member state levels. This process involves measuring the rate at which the implementation of planned activities complies with the work plan and budgets to ensure effective use of resources timely delivery of outputs. In addition to implementation compliance, the IGAD M&E system will be used to monitor progress towards achieving the strategic outcomes. Also, the M&E framework allows for learning as implementation proceeds. This learning informs programming decisions, thereby enabling evidence-based management of processes and activities.
2. To ensure the attainment of the planned deliverables and outcomes, the M&E framework is designed to track the implementation of activities at the country and IGAD levels. The key indicators will be incorporated into IGAD's current CAADP M&E system. The CAADP national focal persons will collect the data and transmit it to IGAD through normal channels.
3. Therefore, the primary purpose of the IGAD M&E framework is to allow for an understanding and monitoring of the progress made by stakeholders in the implementation of specific actions of the IGAD Strategy to ensure the attainment of the Malabo PHL reduction targets.

10.2 Monitoring Implementation of IGAD PHLM strategy.

1. The monitoring of the IGAD strategy will be done mainly by using output and outcome indicators. A criterion for selecting indicators and a list of pre-selected indicators shall be proposed in the following sections. More specific indicators will be identified at the formulation of the implementation and investment plans. Table 4 is a summary of the overall indicators identified for the M&E Framework.

10.3 Criteria for selecting PHLMS Indicators

Indicators do not have to be many; a few good indicators are better than having many indicators. Indicators selected for monitoring and evaluating the IGAD PHLM strategy should meet the following criteria:

- a. Should be sensitive enough to inform stakeholders of progress so that implementation issues are detected and addressed timely.
- b. Should be useful and compelling in communicating impact.
- c. Should measure the result as closely as possible, and proxy indicators should only be considered when direct indicators cannot be used.
- d. Should be Specific, Measurable, Accurate, Realistic, and Time-bound (SMART);
- e. Should be simple and easily understood by all stakeholders.

10.4 Impact Indicators

1. Based on the Results Framework developed in Section 9, the IGAD PHLM Strategy is designed at the impact level to contribute to enhanced national food and nutrition security through reduced post-harvest losses along food value chains. Therefore, impact indicators should be selected to measure food and nutrition security levels at the member state levels. Most of the member states already measure and monitor food and nutrition security. Therefore, the same measuring systems shall provide information for monitoring impact indicators for the IGAD M&E Framework.

2. The general indicators used for measuring food security at the country level are also proposed for the IGAD M&E Framework, and these include:
 - a. Food Consumption Score (FCS);
 - b. Household Dietary Diversity Score (HDDS);
 - c. Household Hunger Score (HHS);
 - d. Global Hunger Index (GHI); and
 - e. Food Insecurity Experience Scale (FIES).

10.5 Outcome Indicators

1. Outcome indicators relate to intermediate and immediate outcomes. Based on the Results Framework, the IGAD PHLM Strategy is designed:
 - a. at the intermediate outcome, level to *halve (decrease by 50%) the 2015 levels of post-harvest losses by the year 2025*: and
 - b. at the immediate outcome level, *effectively guide and coordinate post-harvest management initiatives at national levels towards achieving reduced post-harvest losses in line with the Malabo Declaration and SDG targets*.

Therefore, separate indicators should be selected to measure both the intermediate and immediate outcomes in this respect.

2. **Intermediate outcome:** The intermediate outcome is *to halve (decrease by 50%) the 2015 levels of Post-Harvest Losses (PHL) by 2025 from the year 2015*. Therefore, it is essential to track, as an intermediate indicator, the *'number of member states on track to reducing Post-Harvest Losses for the 5 national priority commodities.'* This is the core indicator reported in 2018 and 2020 CAADP Biennial reports on implementing the Malabo commitments.
3. **Immediate outcome:** The immediate outcome is: IGAD member states supported to improve food security through implementing IGAD level PHM interventions in line with the Malabo Declaration on post-harvest loss reduction and SDG 12.3 on food loss and waste reduction targets
4. It is essential, therefore, to track the immediate indicators that show progress as a result of IGAD support or implementation of the IGAD Strategy to achieve the following objectives:
 - a. PHL awareness and communication
 - b. Coordination and harmonization of PHL management
 - c. Private sector participation in PHL reduction
 - d. Knowledge management and PHM capacity Development
 - e. Research, data collection, and PHL measurement
5. Appropriate proxies for the above overall indicators will need to be disaggregated based on agreed factors whose data is either readily available or that IGAD can support obtaining the data.

10.6 Strategic Objectives (Output) Indicators

1. The indicators at the Strategic Objectives level are related to the outputs produced due to implementing IGAD level interventions. Although these interventions will be coordinated at the IGAD level, the outputs occur at the national level. The SO indicators are dependent on priorities and implementation plans at REC and member state levels. However, the IGAD M&E shall measure the change attributed to the activities undertaken at the REC (IGAD) and country-level under the five strategic objectives as indicated in the IGAD and member state implementation plans.
2. The following categories of indicators are proposed for consideration for each strategic objective (SO).
3. **SO1 indicators: PHL awareness and communication**
 1. PHLM awareness and communication strategies developed

2. PHLM awareness and communication strategies implemented
3. PHLM events & meetings attended
4. Number of participants attending PHLM meetings and events
5. High-level PHL policy dialogue events convened
6. Number of PHLM awareness messages/articles developed
7. Number of media outlets communicating PHLM awareness messages

4. SO2 indicators: Coordination and coherence of PHL management.

1. Establish a regional IGAD PHM technical platform
2. Member states developed national PHLM strategy
3. Member states implemented PHLM strategies.
4. PHLM mainstreaming into food systems strategies developed
5. Member states mainstreaming PHLM strategy into food systems
6. Harmonized legal frameworks for PHL reduction and trade facilitation developed
7. Member states participation in a harmonized food quality and safety regime
8. Strategies on enhancing market linkages and market infrastructures for regional value chains developed
9. Member states' participation in a regional commodity trading platform.
10. Strategy to incorporate PHLM into existing early warning system developed.

5. SO3 indicators: Private sector participation in PHL reduction

1. Regional PPP platform created.
2. Number of public and private entities participating in the platform
3. Regional trading platforms supported
4. Number of countries participating in the regional trading platform.
5. PHLM private sector financing facilities established.
6. Business models that take advantage of regional comparative advantage
7. Private entities benefiting from the private sector financing facility
8. Strategy to promote regional agro-processing facilities for selected value chains developed
9. Regional agro-processing facilities established to link regional value chains

6. SO4: Research, knowledge & capacity development

1. PHLM knowledge and information repository established
2. PHLM curriculum developed
3. PHLM knowledge products developed
4. ATVET colleges adopting the PHLM curriculum
5. Number of researchers trained in PHL assessment and data collection
6. Number of trainers trained in PHLM training skills (ToT)
7. IGAD PHL research and innovation center established
1. PHL studies, innovations and digitalisation.
2. Alliances on data collection and PHL measurement formed
3. A regional PHLM M&E system established.

7. SO5: Mainstream cross-cutting themes

1. Develop a strategy for mainstreaming climate change in post-harvest loss management
2. Number of member states adopting and implementing the climate change mainstreaming strategy
3. Develop a strategy to mainstream gender in post-harvest management
4. Number of member states implementing the gender mainstreaming strategy.
5. Develop a strategy for youth participation and employment in post-harvest loss management
6. Number of member states implementing the youth participation and employment strategy.
7. Pandemic warning system included into regional food security early warning system

10.7 Establishing baselines and setting targets

1. To measure progress in implementing the Strategy, there is a need to determine the baseline levels of the proposed indicators. Baselines and the subsequent deliverables at various intervals as implementation progress helps in monitoring and evaluating progress.
2. Based on the baseline indicators, implementation targets at periodic intervals align with the planned interventions and activities. For example, the final target for PHL reduction is already set in the Malabo roadmap to "reduce post-harvest losses by 50% by 2025". This target will be monitored and achieved at the member state level; at the REC level, the targets mainly apply to the Strategic Objectives and the interventions to achieve them.
3. Although the PHL reduction indicator can be determined for IGAD, such an indicator is beyond the influence and control of this Strategy since it is the member states who implement interventions and actions that directly reduce post-harvest losses. Therefore, the indicators proposed in the resulting framework relate to the IGAD interventions and outputs designed to achieve the Strategic Objectives of this Strategy, as shown in Figure 4 below.

Table 4 IGAD PHLM Strategy Results Framework

IGAD POST-HARVEST LOSS MANAGEMENT STRATEGY RESULTS FRAMEWORK				
ULTIMATE OUTCOME/IMPACT: Enhanced national food and nutrition security through reduced post-harvest losses along food value chains				
GOAL /OUTCOME: <i>to halve (decrease by 50%) the current levels of post-harvest losses (PHL), by the ear 2025 from the year 2015</i>				
Outcome Indicators	Baselines	Targets	Verification Sources	Risks and Assumptions
Number of IGAD member states on track to achieve the Malabo PHL target.	1	8	Malabo performance report	Assume all member states develop a national PHL Strategies & implement it

IGAD POST- HARVEST LOSS MANAGEMENT STRATEGY RESULTS FRAMEWORK				
ULTIMATE OUTCOME/IMPACT Enhanced national food and nutrition security through reduced post-harvest losses along food value chains				
GOAL / OUTCOME <i>to halve (decrease by 50%) the current levels of post-harvest losses (PHL), by the ear 2025 from the year 2015</i>				
OVERALL OBJECTIVE Support IGAD member states improve food security through implementing IGAD level PHL interventions in line with the Malabo Declaration on post-harvest loss reduction and SDG 12.3 on food loss and waste reduction targets				
Indicators	Baselines	Targets	Verification Sources	Risks and Assumptions
MS making efforts to achieve SO1 (PHL awareness and communication)	0	9	Reports	Political will and funding
MS making efforts to achieve SO2 (Coordination and coherence)	0	9	Reports	
MS making efforts to achieve SO3 (private sector participation in PHL reduction)	0	9	Reports	
MS making efforts to achieve SO4 (Knowledge management and PHM capacity Development)	0	9	Reports	
MS making efforts to achieve SO5 (Research, data collection, and PHL measurement)	0	9	Reports	

IGAD POST- HARVEST LOSS MANAGEMENT STRATEGY RESULTS FRAMEWORK				
ULTIMATE OUTCOME/IMPACT				
Enhanced national food and nutrition security through reduced post-harvest losses along food value chains				
GOAL / OUTCOME				
<i>to halve (decrease by 50%) the current levels of post-harvest losses (PHL), by the year 2025 from the year 2015</i>				
OVERALL OBJECTIVE				
Support IGAD member states improve food security through implementing IGAD level PHL interventions in line with the Malabo Declaration on post-harvest loss reduction and SDG 12.3 on food loss and waste reduction targets				
STRATEGIC OBJECTIVE NO. 1: PHLM awareness and communication strengthened				
Indicators	Baselines	Targets	Verification Sources	Risks and Assumptions
PHLM awareness and communication strategies developed	0	1	reports	Funding and political commitment
PHLM awareness and communication strategies implemented	0	1	reports	
PHLM events & meetings attended/convened	0	5	reports	
Number of participants attending PHLM meetings and events	0	100	reports	
High-level PHL policy dialogue events convened	0	3	reports	
Number of PHLM awareness messages/articles developed	0	100	reports	
Number of media outlets communicating PHLM awareness messages	0	8	reports	

IGAD POST- HARVEST LOSS MANAGEMENT STRATEGY RESULTS FRAMEWORK				
ULTIMATE OUTCOME/IMPACT				
Enhanced national food and nutrition security through reduced post-harvest losses along food value chains				
GOAL / OUTCOME				
<i>to halve (decrease by 50%) the current levels of post-harvest losses (PHL), by the year 2025 from the year 2015</i>				
OVERALL OBJECTIVE				
Support IGAD member states improve food security through implementing IGAD level PHL interventions in line with the Malabo Declaration on post-harvest loss reduction and SDG 12.3 on food loss and waste reduction targets				
STRATEGIC OBJECTIVE NO. 2: Well-coordinated and coherent PHL management				
Indicators	Baselines	Targets	Verification Sources	Risks And Assumptions
Establish a regional IGAD PHM technical Multi-Stakeholders platform(MSP)	0	1	reports	Political commitment & funding
Member states developed national PHLM strategy	1	9	reports	
Member states implementing PHLMS strategies.	0	9	reports	
PHLM mainstreaming strategy developed	0	1	reports	
Member states mainstreaming PHLM strategy into food systems	0	9	reports	
Harmonized legal frameworks for PHL reduction and trade facilitation developed	0	3	reports	
Member states participating in a harmonized food quality & safety regime	0	9	reports	
Member states adopt best practices in animal welfare to avoid stress and injuries to reduce post-slaughter losses.	0	9	reports	

Strategies on enhancing market linkages and market infrastructures for regional value chains developed	0	1	reports	
Member states participating in a regional commodity trading platform.	2	9	reports	
Strategy to incorporate PHLM into existing early warning system developed	0	1	reports	

IGAD POST- HARVEST LOSS MANAGEMENT STRATEGY RESULTS FRAMEWORK				
ULTIMATE OUTCOME/IMPACT				
Enhanced national food and nutrition security through reduced post-harvest losses along food value chains				
GOAL / OUTCOME				
<i>to halve (decrease by 50%) the current levels of post-harvest losses (PHL), by the year 2025 from the year 2015</i>				
OVERALL OBJECTIVE				
Support IGAD member states improve food security through implementing IGAD level PHL interventions in line with the Malabo Declaration on post-harvest loss reduction and SDG 12.3 on food loss and waste reduction targets				
STRATEGIC OBJECTIVE NO. 3:				
Private sector participation in PHL reduction				
Indicators	Baselines	Targets	Verification Sources	Risks and Assumptions
Regional PPP platform created.	0	1	report	Funding & political commitment
Number of MS public and private entities participating in the platform	0	9	report	
Regional trading platforms supported	0	1	report	
Number of countries participating in the regional trading platform.	0	9	Report	
PHLM private sector financing facilities established.	0	2	Report	
Business models that promote value addition	0	2	report	
Private entities benefiting from the private sector financing facility	0	18	Reports	
Strategy to promote regional agro-processing facilities for selected value chains developed	0	1	Reports	
Regional agro-processing facilities established to link regional value chains	0	4	reports	

IGAD POST- HARVEST LOSS MANAGEMENT STRATEGY RESULTS FRAMEWORK				
ULTIMATE OUTCOME/IMPACT				
Enhanced national food and nutrition security through reduced post-harvest losses along food value chains				
GOAL / OUTCOME				
<i>to halve (decrease by 50%) the current levels of post-harvest losses (PHL), by the year 2025 from the year 2015</i>				
OVERALL OBJECTIVE				
Support IGAD member states improve food security through implementing IGAD level PHL interventions in line with the Malabo Declaration on post-harvest loss reduction and SDG 12.3 on food loss and waste reduction targets				
STRATEGIC OBJECTIVE NO. 4:				
Research Knowledge, data collection and capacity Development				
Indicators	Baselines	Targets	Verification Sources	Risks and Assumptions
PHLM knowledge and information repository established	0	1		Political will and funding
PHLM curriculum developed	0	4		

PHLM knowledge products developed	0	10	
ATVET colleges adopting the PHLM curriculum	0	9	
Number of researchers trained in PHL assessment and data collection	0	100	
Number of trainers trained in PHLM training skills (ToT)	0	9	
IGAD PHL research and innovation center established	0	1	
PHL studies, innovations & digitalization completed	0	30	
Alliances on data collection and PHL measurement formed	0	1	
Regional PHLM M&E system established	0	1	

IGAD POST- HARVEST LOSS MANAGEMENT STRATEGY RESULTS FRAMEWORK				
ULTIMATE OUTCOME/IMPACT				
Enhanced national food and nutrition security through reduced post-harvest losses along food value chains				
GOAL / OUTCOME				
<i>to halve (decrease by 50%) the current levels of post-harvest losses (PHL), by the year 2025 from the year 2015</i>				
OVERALL OBJECTIVE				
Support IGAD member states improve food security through implementing IGAD level PHL interventions in line with the Malabo Declaration on post-harvest loss reduction and SDG 12.3 on food loss and waste reduction targets				
STRATEGIC OBJECTIVE NO. 5:				
Cross cutting issues				
Indicators	Baselines	Targets	Verification Sources	Risks and Assumptions
Develop a strategy for mainstreaming climate change	0	1	reports	Funding and political will
Number of member states adopting and implementing the climate change mainstreaming strategy	0	9	reports	
Develop a strategy to mainstream gender in post-harvest management	0	1	reports	
Number of member states mainstreaming gender strategy in PHLM	0	9	reports	
Develop a strategy for youth participation and employment in PHLM	0	1	reports	
Number of member of states implementing the youth participation and employment strategy	0	9	reports	
Strategy for inclusion PHLM into the regional early warning system developed	0	1	reports	

11 ACTION PLAN

11.1 Factors for successful implementation

2. One of the identified success factors in implementing the AU PHLM strategy is that all three levels, i.e., national, REC, and AU, should conform with the guiding principle of subsidiarity: levels should implement interventions relevant to their mandates. This means that technical issues or value chain level interventions should be coordinated at the country level. In contrast, those activities that support country-level activities are coordinated at the REC or AU level.
3. Secondly, duplications of activities should be avoided. This means that interventions or actions at the AU level should not be duplicated at the REC or Member State level. The expectation is that higher-level actions should add value to actions taken at a lower level. However, suppose they don't add value and are duplicates of lower-level activities. Then, they should not be implemented at the upper level because doing so is a waste of resources and inefficient.
4. Thirdly, the success of the IGAD PHLM strategy also depends on the extent to which the AU and member states implement their relevant PHLM actions. This is because the IGAD strategy is designed to support member states and compliment AU PHLM actions. Therefore, if member states fail to develop and implement their PHLM strategies, the IGAD strategy becomes ineffective. In essence, this implies that the IGAD PHLM Strategy cannot be implemented in isolation of national and AU PHLM strategies. Otherwise, the IGAD strategy is a mute document. Thus, the AU strategy, the IGAD Strategy, and national strategies must be implemented if results are going to be achieved.
5. The other critical success factor is that the Strategy is focused on a few critical, high-level strategic actions that can have a high impact in achieving the overall objective if carefully targeted.
6. Lastly, ensuring there is adequate funding to implement the Strategy plays a significant role in determining the success of the proposed activities.

11.2 Implementation Timeframe

1. The IGAD PHL strategy is designed to support member states to achieve their Malabo PHL reduction goals through implementing their PHLM strategies. According to the Malabo commitments, the goal is to reduce post-harvest loss levels (2015) by 50% by 2025. Therefore, this strategy is to be implemented over five years to coincide with the 2025 Malabo horizon. Should the target and horizon change, since this is a living document, the same elements can be altered to suit the changed circumstances.
2. The implementation of the proposed interventions is prioritized such that interventions that are critical for success and impact are prioritized in the short term. At the same time, those that are dependent on other actions will be carried out at the appropriate time.
3. The financing of the implementation process is critical, and this depends on, among other issues, the level of involvement by IGAD and how member states will prioritize PHL reduction. Therefore, it is essential that the financing plan also put a resource mobilization strategy based on the cost of activities to be undertaken.

11.3 Proposed Intervention Areas for Implementation

1. All activities proposed under the five strategic objectives will be implemented over five years. However, key activities will be prioritized since they form the foundation of other activities like the development

of National strategies, which guide the implementation of national interventions aligned to the Malabo targets. Therefore, setting up a PHL technical working group should be done earlier to oversee activities' prioritization and establish the IGAD PHL coordination mechanism.

2. Each proposed activity is broken down into individual activities with separate detailed implementation schedules, including any appropriate institutional and operational setups, budgeted for and executed.

Table 5 Intervention plan

Pillar	Strategic Focus Areas	Indicative Intervention Areas (Proposed Activities for Implementation) (Part 5, Figure 2, Results Chain)	
		Immediate Activities	Short to Medium Term Activities
1.	PHL awareness and communication	<ul style="list-style-type: none"> • High-level PHL policy dialogue event convened • PHLM awareness and communication strategies developed 	<ol style="list-style-type: none"> 1. PHLM awareness and communication strategy implemented 2. PHLM events & meetings attended
2.	Coordination and coherence of PHL reduction.	Establish a regional IGAD PHM technical platform	<ol style="list-style-type: none"> 1. Member states developed national PHLM strategies 2. Member states implemented PHLM strategies. 3. PHLM mainstreaming into food systems strategy developed 4. Member states mainstream PHLM strategy into food systems 5. Harmonized legal frameworks for PHL reduction and trade facilitation developed 6. Member states participation in a harmonized food quality and safety regime 7. Strategy on enhancing market linkages and market infrastructures for regional value chains developed 8. Member states' participation in a regional commodity trading platform. 9. Strategy to incorporate PHLM into existing early warning system developed.
3.	Private sector participation in PHL reduction	Regional PPP platform created.	<ol style="list-style-type: none"> 1. Number of public and private entities participate in PPP platform 2. Regional trading platforms supported 3. PHLM private sector financing facilities established. 4. Private entities benefiting from the private sector financing facility 5. Strategy to promote regional agro-processing facilities for selected value chains developed 6. Regional agro-processing facilities established to link regional value chains
4.	Knowledge management and PHM capacity Development	PHLM knowledge and information repository established	<ol style="list-style-type: none"> 1. PHLM curriculum developed 2. PHLM knowledge products developed 3. ATVET colleges adopt the PHLM curriculum 4. Researchers trained in PHL assessment and data collection 5. Trainers trained in PHLM training skills (ToT)
5.	Research, data collection, and PHL measurement	Put in place an M&E system to monitor progress on PHL reduction goals.	<ol style="list-style-type: none"> 1. IGAD PHL research and innovation center established 2. Research & studies on innovations and loss assessment 3. Alliances on data collection and PHL measurement formed 4. Regional PHLM M&E system established.

12 REFERENCES

1. Admassu, Shimelis (n.d.), *Post-harvest Sector Challenges and Opportunities in Ethiopia*, Ethiopian Agricultural Research Organization
2. African Union (AU), 2017, *Technical Guidelines: Document for preparing country Biennial Review report on progress made for achieving the Malabo Declaration Goals and Targets*.
3. African Union Commission (AUC), 2014, '*Malabo Declaration on Accelerated Agricultural Growth and Transformation for Shared Prosperity and Improved Livelihoods*' African Union Commission, Addis Ababa.
4. African Union Commission (AUC), 2018, *Inaugural Biennial Review Report of the African Union Commission on the Implementation of the Malabo Declaration on Accelerated Agricultural Growth and Transformation for Shared Prosperity and Improved Livelihoods*, Assembly Decision (Assembly/AU/2(XXIII) of June 2014, published January 2018
5. Alliance for a Green Revolution in Africa (AGRA). 2013. *Establishing the status of post-harvest losses and storage for major staple crops in eleven African Countries (Phase I)*. AGRA: Nairobi, Kenya.
6. Christiaensen, Luc, and Lionel Demery, eds. 2018. *Agriculture in Africa: Telling Myths from Facts. Directions in Development*. Washington, DC: World Bank. doi:10.1596/978-1-4648-1134-0. License: Creative Commons Attribution CC BY 3.0 IGO - World Bank publication 2018.
7. DFID-CSO 2010. *SPW Youth Participation in Development Guide* SPW/ DFID-CSO Youth Working Group.
8. Ethiopia (2016), *Post-Harvest Management Strategy in Grains in Ethiopia, 31 October 2016*, Ministry of Agriculture and Natural Resources, The Federal Democratic Republic of Ethiopia (Draft report not yet published),
9. FAO (2011), *Global Food Losses And Food Waste – Extent, Causes And Prevention*. Rome, <http://www.fao.org/docrep/014/mb060e/mb060e.pdf>
10. 2011. *Global food losses and food waste – Extent, causes and prevention*. Rome.
11. FAO (2014), *Global Initiative on Food Loss and Waste Reduction Definitional framework of food loss*, Working Paper, 27 February 2014
12. FAO. 2017. *Case studies on fish loss assessment of small-scale fisheries in Indonesia*, by Singgih Wibowo, Ansen R. Ward, Yvette Diei-Ouadi, Siar Susana and Petri Suuronen. FAO Fisheries and Aquaculture Circular No. 1129. Rome, Italy.
13. FAO. 2018. *Food loss and waste and the right to adequate food: making the connection*. Rome. 48 pp. Licence: CC BY-NC-SA 3.0 IGO.
14. FAO. 2018. *Gender and food loss in sustainable food value chains – A guiding note*. Rome
15. FAO. 2019. *The State of Food and Agriculture 2019. Moving forward on food loss and waste reduction*. Rome. Licence: CC BY-NC-SA 3.0 IGO.
16. FAO 2020. *Code of Conduct on Food Loss and Waste Reduction (draft still to be published)*
17. Grolleaud, Michel, 2002, *Post-Harvest Losses: Discovering the Full Story, Overview of the Phenomenon of Losses During the Post-harvest System*, Food and Agriculture Organisation, (FAO) publication at <http://www.fao.org/docrep/004/ac301e/AC301e00.htm>
18. Helvetas, 2018 *Bellagio statement on post-harvest management March 5, (also available here <https://www.helvetas.org/en/switzerland/what-we-do/our-topics/economies/economy-expert/bellagio>)*
19. High Level Panel of Experts on Food Security and Nutrition of the Committee on World Food Security (HLPE). 2014. *Food losses and waste in the context of sustainable food systems*. Rome.
20. IGAD *Regional Strategy the Framework* Volume 1 (2016)
21. Nkonde *et al* (2018): Nkonde, Chewie; Lubinda, Rebecca; and Kachapulula, Paul, March 2018, *Post-Harvest Management Strategy for Zambia (2018 – 2025)*

22. Tanzania (2017), National Post-Harvest Management Strategy (2017 – 2027), December 2017, Ministry of Agriculture, The United Republic of Tanzania.
23. US Department of State, 2013, *Postharvest Loss Challenges, Discussion Paper*, November 13, 2013, Office of Agriculture, Biotechnology, and Textile Trade Affairs, Bureau of Economic and Business Affairs.
24. World Bank. 2011. *Missing food: the case of post-harvest grain losses in Sub-Saharan Africa*. World Bank, Other Operational Studies 2824. Washington, DC
25. WRI 2018. *Reducing Food Loss and Waste: Ten Interventions to Scale Impact* Washington, DC. USA
26. Zimbabwe (2018), *Postharvest Management Strategy for Zimbabwe 2017 – 2025*, Ministry of Lands, Agriculture and Rural Resettlement, Zimbabwe (Draft Report not yet published)