

**THE ROLE OF MULTI-STAKEHOLDER PLATFORMS IN THE PROMOTION
OF AGRICULTURAL INNOVATIONS IN TANZANIA**

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**A THESIS SUBMITTED IN FULFILMENT OF THE REQUIREMENTS
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ABSTRACT

Multi-stakeholder platforms (MSPs) are an increasingly popular approach used in the agricultural research and development to stimulate stakeholders' interaction, collaboration and engagement in the innovation process. However, the empirical evidence on the role played by MSPs to achieve the desired outcomes of specific food value chains is limited. The experience shows that the outcomes of food value chains are often less than expected. This study was designed to assess the contribution of MSPs used for sunflower value chain upgrading in improving food security and livelihood of farmers in Dodoma Region of Tanzania. The study was conducted in Chamwino, Kongwa and Dodoma district councils and adopted a cross-sectional research design. Qualitative and quantitative data were collected using household surveys, key informant interviews and focus group discussions whereby 397 respondents were interviewed. Descriptive and inferential statistics were computed to generate variables such as frequencies, means and percentages. A paired samples t-test statistical analysis was performed to assess the impact of stakeholders' engagement processes on the performance of MSPs to achieve desired sunflower value chain outcomes. It was found that the process of setting up sunflower value chain MSPs capitalised on the experience of value chain support institutions in working with multidisciplinary actors in development fields. Capacity building interventions have improved competences and capacities of stakeholders to deliver quality services. Furthermore, the use of MSP approach has improved social capital, networking and trust among farmers, access to financial services, and policy environment for sunflower business. From 2012 to 2014, changes in sunflower production, sunflower sales, market price and household income were statistically significant. Various factors ranging from the structure and membership composition of MSPs, policies and frameworks, capacities of MSPs' members, and benefits accrued by

platforms' members also affected the performance and functioning of MSPs. In order to improve performance of MSPs for food value chains, it is imperative to design specific interventions aimed to strengthen the capacities of platforms' members to improve service delivery. To achieve a broader impact and sustainability of food value chain outcomes, MSPs processes facilitators should always promote integrated approaches that go beyond the specificity of specific value chains.

DECLARATION

I, Laurent N. Kaburire, do hereby declare to the Senate of Sokoine University of Agriculture that this thesis is my own original work done within the period of registration of my studentship and that it has neither been submitted nor being concurrently submitted to any other institution.

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LIST OF ABBREVIATIONS AND ACRONYMS

AIS	Agricultural Innovation System
AMCOS	Agricultural Marketing Cooperative Society
ARD	Agricultural Research and Development
ARI	Agricultural Research Institute
CEZOSOPA	Central Zone Sunflower Processors Association
CHAKIUMA	<i>Chama Kikuu cha Usindikaji wa Mafuta ya Alizeti</i>
FAO	Food and Agricultural Organization
FGD	Focus Group Discussion
FVC	Food Value Chain
GAP	Good Agronomic Practice
GDP	Gross Domestic Product
HCT	Honey Care Tanzania
IRDP	Institute of Rural Development Planning
IS	Innovation system
KI	Key Informant
LVIA	Lay Volunteer International Organisation
M4P	Making the Market work for the Poor
MDGs	Millennium Development Goals
MoCU	Moshi Co-operative University
MOU	Memorandum of Understanding
MSP	Multi-stakeholder Platform
MVIWATA	<i>Mtandao wa Vikundi vya Wakulima Tanzania</i>
NBC	National Bank of Commerce
NGO	Non-Governmental Organisation

NSGRP	National Strategy for Growth and Reduction of Poverty
PMC	Processor and Marketing Cooperative
QDS	Quality Declared Seed
PPP	Public Private Partnership
RAA	Regional Agricultural Advisor
RLDC	Rural Livelihood Development Company
SACCOS	Savings and Credit Cooperative Society
SEDIT	Social and Economic Development Initiatives for Tanzania
SIDO	Small Industries Development Organisation
SITA	Supporting India's Trade and Investment project
SPSS	Statistical Package for Social Sciences
SUA	Sokoine University of Agriculture
TARI	Tanzania Agricultural Research Institute
TASUPA	Tanzania Sunflower Processors Association
TEOSA	Tanzania Edible Oils Suppliers Association
TOAM	Tanzania Organic Agriculture Movement
TOR	Terms of reference
TOSCI	Tanzania Official Seed Certification Institute
TWG	Taaluma Women Group
TZS	Tanzania Shilling
UMADEP	Uluguru Mountains Agricultural Development Project
UNIDO	United Nations Industrial Development Organisation
URT	United Republic of Tanzania
VAT	Value Added Tax
VC	Value Chain
VEO	Village Extension Officer

VICOBA	Village Community Bank
WEO	Ward Extension Officer
WFP	World Food Programme
WOPATA	Women and Poverty Alleviation in Tanzania

CHAPTER ONE

1.0 INTRODUCTION

1.1 Background Information

Food security is among the most pressing challenges for humankind. Fluctuating market situations, droughts and diseases are increasing the unpredictability and insecurity of food supply in Africa (Ziervogel and Ericksen, 2010; Foley *et al.*, 2011). A number of recent research and development programmes have been focusing on increasing food security (World Bank, 2012). However, the technologies, innovations and other solutions designed to address food insecurity have not been very successful in improving the living conditions of resource-poor farmers (Nederlof *et al.*, 2011).

In Tanzania, low productivity, dependency on rain-fed agriculture, inadequate support services, poor infrastructures, weak agro-industries, low quality of agricultural produce, environmental degradation, climate change, diseases and inadequate participation of the private sector are some of the many challenges that hinder the growth of the agricultural sector (URT, 2012). These challenges are very complex in nature and affect multiple actors along and beyond specific agri-food chains (Dentoni *et al.*, 2012a). In smallholder dominated agriculture, challenges facing the agricultural sector are framed in relation to weak innovation systems and inadequate capacities of actors to find appropriate solutions (Kilelu *et al.*, 2012).

From the 1990s, an innovation system (IS) concept was adopted to address challenges facing agricultural development. The concept embraces knowledge and technology development and the interaction of all actors in the innovation process. Recently, the IS concept has become an increasingly popular approach in agricultural development as one of the most effective frameworks to analyse and explore solutions to complex agricultural

problems (Hall *et al.*, 2003; World Bank, 2006). Some authors have defined complex agricultural problems as problems that have multiple dimensions (Schut *et al.*, 2014), that are embedded in interactions across different levels of the organizational and social settings (Giller *et al.*, 2008), and where multiple stakeholders are involved (Hemmati, 2002). The IS concept was therefore born from a transition from technology-oriented approaches, to more systems-oriented approaches to agricultural innovation (Klerkx *et al.*, 2012).

From recent years, food value chain approach has become increasingly promoted to guide the implementation of high-impact and sustainable initiatives focused on increasing productivity, market competitiveness, entrepreneurship and economic growth of small and medium enterprises (Kilelu *et al.*, 2017). The food value chain approach uses multi-stakeholder platforms (MSPs) as frameworks to stimulate interaction of stakeholders in the food value chain by providing them with space for negotiation, joint planning, working together and learning (Nederlof *et al.*, 2011).

“Multi-stakeholder platform” (MSP) also known as “Innovation Platform (IP)” is therefore one of the approaches being currently used in agricultural research and development (ARD) to promote the innovation systems concept. MSP is an increasingly popular approach being used to address agricultural sector related challenges to enhance collaboration and innovation within ARD (Fror *et al.*, 2016). According to Adekunle and Fatunbi (2012), different programmes and frameworks calling for effective and strong multi-stakeholder engagement processes have been developed to respond to the challenges facing the agricultural sector. MSPs are promoted to create a space for stakeholders’ engagement, interaction and mutual learning in the innovation process to ensure effective use of information and knowledge generated by research and

development (Nederlof *et al.*, 2011). They are subsets of the broader concept of the participatory approach and they can range from simple consultative to transformative processes (Brett, 2003). In ARD, MSPs are believed to present cost-effective opportunities because they provide room for partners to synergize and bring more resources and knowledge together to address a problem of common interest. MSPs are multiple stakeholders collaboration networks or alliances used to bring together groups of individuals (who often represent organisations) with different backgrounds, expertise and interests such as farmers, traders, food processors, researchers, government officials and others to provide them with a space for learning, action and change (World Bank, 2006).

In recent years, MSPs have become more recognized as potential tools to link various actors in the food value chains (FVCs) to overcome market failures (Nederlof *et al.*, 2011; Swaans *et al.*, 2013). The increased adoption of MSP approach in the food value chain development can be justified by the fact that FVC upgrading process also requires engagement of diverse stakeholders operating along the food supply chain in a strategic dialogue, in order to find solutions to common problems and take appropriate actions (Batie, 2008; Peterson, 2010; Brown *et al.*, 2012). Using MSP approach in the FVC would therefore help actors in it to understand clearly how available inputs and services can be put together to improve production, marketing and consumption of specific commodities in a profitable way.

In Tanzania, a number of policies and strategies that embrace the MSP approach have been designed to guide the implementation of programmes and project related to the development of the agriculture sector. Among these include the National Agriculture Policy of 2013, the National Public Private Partnership (PPP) Policy of 2010, the Agriculture Sector Development Strategy (Phase I and II) and the Tanzania Agriculture

and Food Security Investment Plan of 2011. All these policies and strategies emphasise the need to promote a sector-wide approach to planning and management of development interventions which identifies inter-related constraints and opportunities and addresses these through coordinated action across actors and sub-sectors; and through promoting private sector participation in the provision of resources in terms of investment capital, managerial skills and technology.

In 2006 and 2008, the Rural Livelihood Development Company (RLDC) and Oxfam Tanzania, respectively, initiated two development projects to support sunflower value chain development in the central zone of Tanzania. The main objective of these interventions was to improve market systems for the sunflower subsector, to have meaningful impact to farmers' livelihoods (RLDC, 2008) and to optimize income of smallholder farmers (Oxfam, 2012). In 2012, the initiatives adopted MSP approach to enhance the implementation of selected upgrading strategies, enhance interaction and engagement of key actors in the sunflower value chain to join hands together in setting strategic directions, identifying complementarities and in developing joint actions.

Although sunflower value chain upgrading initiatives applied a market development systems approach to improve sunflower business, the ultimate goal was to improve the living conditions of smallholder farmers through increased household income and access to food for farmers in Dodoma Region. This study was therefore designed to understand to what extent the use of the MSP approach in the implementation of sunflower value chain upgrading initiatives has contributed to the growth of the subsector, improved performance of value chain actors to deliver better services and ultimately their contribution to improved living standards of smallholder farmers. In this study, MSPs stand for any forms of collaboration or institutional arrangements that were formally or

informally established to stimulate interaction and engagement of various actors in the sunflower value chain upgrading process in Dodoma Region.

Multi-stakeholder engagement processes in Dodoma Region were expected to improve the competences and capacities of stakeholders in the sunflower value chain upgrading to deliver quality services. MSP approach was expected to contribute to increased sunflower production, household income and access to food by farmers in the study area. Through multi-stakeholder engagement processes, it was anticipated that social capital, networking and trust among key actors, access to financial services to processors and traders, as well policy and business environment for sunflower value chain actors would improve.

Tukahirwa *et al.* (2013) have also found that MSPs help to create a strong coalition and common voice to advocate for issues of the platform, improve cooperation and build the innovative capacity of members to address the challenges of the platform. Other studies have found that the use of MSP approach helps to stimulate and support collaboration between actors in the agricultural sector to address problems of common interests (Nederlof *et al.*, 2011; Tenywa *et al.*, 2011).

While the sunflower value chain upgrading process in Dodoma Region adopted MSP approach in its implementation, the existing literature does not provide any empirical evidence on how MSPs have enabled stakeholders elsewhere to improve service delivery, improve the growth of sunflower subsector and improve household income and access to food for farmers involved in the sunflower value chain. The lack of evidence on the contribution of these MSPs to the achievement of desired development outcomes of specific food value chains calls for more scientific investigations to critically understand

their usefulness in the implementation of selected strategies and their impacts on the desired development outcomes.

Martey *et al.* (2014) also suggested that specific studies should be conducted to assess the impact of MSPs on household income and food security of smallholder farmers in the innovation process. The need for further studies on MSPs is supported by Kilelu *et al.* (2012) who reported that there is no sufficient empirical evidence in the literature to critically understand how MSPs contribute to the dynamic innovation process to achieve desired outcomes of specific food value chains. This study was therefore designed in the attempt to contribute to the above knowledge gaps in the literature by generating empirical evidence on the contribution of sunflower MSPs to the intended development outcomes of sunflower value chain in Dodoma Region.

1.2 Problem Statement

While Multi-stakeholder platforms (MSPs) are an increasingly popular approach applied in the food value chain upgrading processes, the experience shows that the outcomes of most food value chains are often less than expected. The World Bank (2006) recognises that multi-stakeholder interactions could be considered as best practices for agricultural knowledge and information system in the agrifood value chain development process. Despite the increasing recognition of MSPs as potential tools to link various actors in the food value chains (Nederlof *et al.*, 2011; Swaans *et al.*, 2013), the outcomes from food value chains upgrading are often very low or much lower than expected. This raises questions as to why do various development partners and actors in ARD are increasingly promoting MSPs as effective tools to upgrade food value chains while the outcomes are not guaranteed.

The literature shows that despite the increasing use of MSPs in the food value chain upgrading, the knowledge of how these platforms contribute to the innovation process to achieve the desired outcomes is not yet well known (Badibanga *et al.*, 2013). The literature shows that there is no one-size-fits all way of establishing and managing an effective MSP (Hemmati, 2002; Schut *et al.*, 2017). Other studies have shown that there are no clear guidelines to guide the identification and involvement of different stakeholders in constructive problem-solving exercise (Tenywa *et al.*, 2011). A study by Kilelu *et al.* (2012) reported that sufficient empirical evidence is lacking to critically understand how MSPs contribute to the dynamic innovation process to achieve desired development outcomes.

In Tanzania, MSPs have also been adopted to enhance the implementation of various agricultural research and development programmes. The establishment of sunflower MSPs was one of the strategies used by RLDC and Oxfam Tanzania to strengthen the competencies of stakeholders in the sunflower value chain for effective service delivery, increasing sunflower production, and improving household income and access to food through sunflower sales. However, whether or not the use of MSP approach in the food value chain upgrading process provides appropriate solutions to the challenges faced by smallholder farmers in the agriculture sector remains a critical question to validate.

Drost *et al.* (2012) argue that it is very challenging to determine clearly the causality in the relationships between MSPs and their effects on the outcomes of an innovation process and this may require further studies to establish these relationships. Building on the existing scholarly debates and the lack of practical and empirical evidences on the contribution to MSPs in the food value chain upgrading justify the need for this study in

order to understand their effects on the implementation process and outcomes of food value chain upgrading interventions.

1.3 Justification of the Study

Most studies on MSPs have only focused on the formation, governance and management aspects without providing a clear understanding of how these platforms shape the innovation process to achieve desired outcomes (Klerkx *et al.*, 2010). The literature provides empirical evidence of some key steps to follow in implementing and facilitating MSPs (Schut *et al.*, 2018), and how they can be implemented and facilitated (Adekunle *et al.*, 2010). One important aspect that is lacking in the substantial theoretical debates in the literature is the effectiveness of MSPs in the promotion of agricultural innovations and strategies for food value chains upgrading and how they influence the outcomes of specific value chains.

Without clearly understanding how the MSP approach contributes to the end results of an innovation process or the desired development outcomes of particular food value chains, there is a greater risk of promoting MSP approach as fashionable model for all research and development interventions aimed to address agricultural sector challenges. Some authors (e.g. Schut *et al.*, 2018; Waner, 2006) who analysed multi-stakeholder partnership models in other sectors have also warned against that. Schut *et al.* (2018) and Waner (2006) are of the view that there is a big risk of promoting MSP approach as blueprint for addressing all development challenges if further studies are not conducted to understand how they contribute to the intended value chain outcomes.

Generally, development practitioners, governments and donor agencies all recognise that measuring and attributing impacts to an MSP in terms of economic growth and livelihood

improvements requires much investment (Nederlof *et al.*, 2011). To account for the value of money invested in the MSP processes, it is very crucial to generate empirical evidence that showcases the contribution of MSP approach to the desired development outcomes of food value chains. Sunflower value chain upgrading is one of development interventions in Tanzania that have applied MSP approach in its implementation process. This study will therefore investigate to what extent MSP approach has enabled sunflower value chain actors particularly smallholder farmers in Dodoma Region to improve their living conditions as result from their engagement in the value chain upgrading interventions.

1.4 Objectives

1.4.1 Overall objective

The overall objective of this study was to assess the contribution of MSPs in the implementation of food value chain upgrading interventions to improve food security and livelihood of farmers in Tanzania.

1.4.2 Specific objectives

The specific objectives of the study were:

- i. To determine modalities for the establishment of MSPs for sunflower value chain upgrading
- ii. To assess the effects of multi-stakeholders' engagement processes on the performance of MSPs set for sunflower value chain upgrading.
- iii. To assess the changes in household income and access to food by farmers in view of the performance of sunflower MSPs
- iv. To identify factors that influence the performance of MSPs for sunflower value chain upgrading

1.4.3 Research questions

The study attempted to answer the following questions:

- i. What are the modalities and principles that guided the establishment of sunflower value chain MSPs and the selection of stakeholders to implement selected upgrading strategies?
- ii. How did stakeholders' engagement processes enhance the performance of MSPs to achieve the objectives of sunflower value chain?
- iii. How did MSPs in the sunflower value chain upgrading process contribute to improving household income and access to food for smallholder farmers in the study areas?
- iv. What were the factors that enhanced the performance of MSPs to achieve the objectives of sunflower value chain initiatives?

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 MSP Approach within the Innovation Systems Perspective

An Agricultural Innovation System (AIS) is essentially about multi-actor interactions and structures (infrastructures, policies, institutions) that may serve to enhance innovation, with an understanding that innovation goes beyond technology development, but also often requires an improvement of parts of the innovation system itself to enable coordination of the relevant subsystems (Klerkx, *et.al.*, 2012).

There are different variants and ways of thinking regarding AIS. In a number of studies and analyses, AIS tends to be approached as an ‘innovation support infrastructure’ (Vellema *et al.*, 2009), while other studies tend to highlight the process side of AIS (Hall and Clark, 2010; Klerkx *et al.*, 2010). This study tried therefore to look on the two dimensions of AIS in order to understand its impact on addressing development challenges. An AIS often results into a more dynamic analysis capable of assessing the co-evolutionary process of interactive development of technology, practices, markets and institutions.

Hall and Clark (2010) and Klerkx *et al.* (2010) describe the innovation systems as self-organizing growing networks of actors connected to the development of a certain novelty, emerging from a dominant incumbent production system or value chain configuration and moving towards an alternative system or even replacing it. Functionalist approaches to innovation systems tend to focus on whether or not specific functions of an innovation process are fulfilled (Hekkert *et al.*, 2007). Functionalist thinking draws upon a biological metaphor which argues that an organism cannot function well if some of its organs or parts are missing. The functions of the innovation systems approach are linked to co-

evolutionary approaches as it intends to systematically map technological innovation system activities, providing insights into the interaction of forces that determine the slow and difficult change of a merely locked-in system towards a new equilibrium (Hekkert, *et al.*, 2007).

An innovation system (IS) can therefore be defined as a network of organizations, enterprises, and individuals focused on bringing new products, new processes, and new forms of organization into economic use, together with the institutions and policies that affect their behaviour and performance (World Bank, 2006). Mwesige (2010) defines an IS as a research and development approach used to bring together different stakeholders who have an interest in a problem situation and engage them in a process of dialogue and collective learning that improves decision-making, action and innovation.

An IS concept is believed to embrace not only the science suppliers, the totality and interaction of actors involved in innovation process but also it extends beyond the creation of knowledge to encompass the factors affecting demand for and use of the knowledge generated in novel and useful ways (Nederlof *et al.*, 2011). The IS approach has often been adopted in agricultural sector development with the aim to improve commodity value chains (Adekunle *et al.*, 2012). To enhance effective inclusion of smallholder producers and other partners in the global food systems and value chains, MSPs are increasingly being recognized as promising mechanisms to stimulate stakeholders' engagement and participation in the innovation process (Drost *et al.*, 2012).

The strengths of MSPs stem from the fact that they are voluntary and collaborative arrangements between various actors, which have an institutionalized, but yet non-hierarchical structure that strive for a sustainability goal (Glasbergen *et al.*, 2007), and

where everyone involved in the Multi-stakeholder processes takes responsibility for the outcomes. Multi-stakeholder partnership approach is recognized as a tool for participatory and collective action used to facilitate livelihood and research and development initiatives with the aim to promote better decision making by ensuring that the views of the main actors concerned about a particular decision are heard and integrated at all stages of development through dialogue and consensus building (Hemmati, 2002). The approach is used to stimulate interaction and hence innovation in a way that fits the specific needs and realities of actors in the innovation process.

The core role of MSP is to create trust and synergy between actors who come together to generate solutions that provide mutual benefits (win-win situation) to all, improve coordination and collaboration along the value chain, resulting in more efficient and equitable linkages, that benefit those poor who are economically active. Klerkx and Leeuwis (2009) argue that in order to bring actors in a specific value chain together to work as a platform and to make the platform perform well, MSPs should be facilitated by intermediaries working at several interfaces and interacting with all different types of actors in such an innovation process.

2.2 Theoretical Concepts and Preconditions for Successful MSPs

A common assumption behind the platforms is that stakeholders always need an opportunity or intervention to break barriers against joint discussion, action, sharing and learning and to interact. MSPs are therefore the tools that help stakeholders to interact in a concerted manner. The assumption is that effective stakeholder engagements enable better planned and more informed policies, projects, programmes and services (Fowler and Biekart, 2017). While it is assumed that effective stakeholders' engagement would yield

positive outcomes, the level of achievement of the outcomes MSPs are designed to achieve may differ from one intervention to another.

The management capacities of MSPs facilitators and resources needed to implement joint actions have greater influence on the outcomes from stakeholders' engagements process. Better policies, well planned projects, programs and services may require specific competencies, resources and management capacities of implementers to bring about positive outcomes. This study has tried to understand the contributions and effects of stakeholders' engagement processes on the performance of MSPs to achieve the desired outcomes of food value chains.

2.2.1 Multi-stakeholder engagement or stakeholder theory

Multi-stakeholder engagement plays a critical role in value creation when an agri-food business faces strategic decisions in response to complex problems. It is a term of theory and practice used across a wide array of disciplines. Multi-stakeholder engagement refers to both the coalition (alliance, partnership, initiative, etc.) consisting of multiple stakeholders and the process by which such a group of stakeholders functions (Peterson, 2013). Multi-stakeholder engagement is embedded in the stakeholder theory which tries to understand and remedy three interconnected business problems: the problem of value creation and trade in a rapidly changing and global business context, the problem of the ethics of capitalism by identifying the connections between capitalism and ethics, and the problem of managerial mindset by helping managers to think about how to better create value and connect business and ethics (Freeman *et al.*, 2010).

Multi-stakeholder engagement is therefore about having stakeholders engaged with each other to co-create new knowledge, connect and enhance values, and collectively learn

their way to new practices. According to Peterson (2013), if engagement happens, the stakeholders in the innovation process move beyond conflicts and compromise to co-creation, learning and action. In order to achieve the sustainability of food value chain outcomes, the multi-stakeholder engagement or stakeholder theory should always strive to achieve both system outcomes and process outcomes. System outcomes represent the content side of performance, the real things that stakeholders want changed in the innovation system while process outcomes represent the ultimate ability to implement system change in order to achieve system outcomes.

System outcomes and process outcomes are complementary in project performance and not substitutes. When multi-stakeholder engagement succeeds, the end-point is effectively implemented innovation where system and process outcomes have been achieved, diverse values are connected, and new knowledge has been created. However, while stakeholder theory recognises that all stakeholders in the food value chain must be treated equally in terms of resource allocation and engagement in the innovation process, some authors argue that value chain support institutions or firms may treat its stakeholders differently depending on their merits in relation to their contribution to the platforms (Freeman *et al.*, 2003).

2.2.2 Characteristics of multi-stakeholder platforms

In the agricultural sector, the use of MSPs emerged in the early 1990s, for the purpose of creating a space for deliberation, negotiation, and learning to solve complex natural resource management issues (Nederlof *et al.*, 2011). Theories and concepts that are already being used to study the general field of 'Multi-stakeholderism' fall under three main bodies of theory and literature. The first one is the inter-organisational relations (Alexander, 1995); second the 'ecology' of organisations in operating environments (Scott

and Meyer, 1994); and third collective action (Ostrom, 2005). MSPs must clearly define stakeholders to be engaged in the innovation process.

According to the authors of the above theories, stakeholders are typically understood in two frames of reference: organisation-centred or social-intervention centred. On one side, the organisation-centred concept of a stakeholder is dominated by business application, which usually translates into persons or entities that have an interest in that particular business. On other side, the social intervention related concepts of stakeholder is commonly found within public policy and the international development system where a social problem is the centre of attraction and whereby all stakeholders are responsible for the attainment of the intended outcomes.

Hemmati (2002) defines 'Multi-stakeholderism' as processes which aim to bring together major stakeholders in a new form of communication, and decision-finding on a particular issue. She emphasizes the importance of democratic principles of equity and accountability, as well as transparency and participation in multi-stakeholder practices and design. Multi-stakeholder processes come in multiple forms and sizes, and can be formal or informal ways of collaboration (Russo and Tencati, 2009). They can also relate to different levels of governance and can be applied to distinct phases of policy formation, from formulation to implementation and evaluation.

According to Bart (2011), 'Multi-stakeholderism' can refer to the aspiration for a more effective, transparent and legitimate decision-making process concerning complex contemporary issues. Based on the above theoretical reasoning, an MSP can be viewed as a flexible framework which is constructed as a new species in the eco-system of decision finding, governance structures and processes (Hemmati, 2002). MSPs are

multidisciplinary in nature and establish cognitive diversity while increasing the capacity of members to analyze and solve technical problems and address systemic challenges (Mitchell and Nicholas, 2006; Nederolf *et al.*, 2011).

Some scholars argue that MSPs can be distinguished based on the role they play and what they deliver instead of stakeholder participation, management aspects or the way they are designed. In examining transnational public private partnerships, Beisheim and Liese (2014) distinguish MSPs on the basis on three major aspects which constitute the primary objective of MSPs rather than being mutually exclusive: (a) service delivery or implementation, (b) knowledge transfer, and (c) setting of standards.

Miller-Dawkins (2014) cited by Fowler and Biekart (2017) differentiates MSPs based of the type of stakeholder participation in its implementation process whereby three types of MSPs are explained. One is “representative MSPs” that have stakeholders nominated by stakeholder groups which are represented on governing structures, second is “deliberative MSPs” that focus on consensus building and dialogue which can be designed to ensure that voices of marginalised and ‘non-organised’ stakeholders are heard and the third is “functional MSPs” that concentrate on technical problem solving or resolving conflicts.

Depending on the nature, composition and objectives of specific MSP, it is probable that MSPs may be formed to bring to the collaboration specific competencies from involved stakeholders that are required to achieve a common objective (Fowler and Biekart, 2017). To win the support from all stakeholders, an MSP should therefore act as a tool to promote interactive governance and guide multiple stakeholders with diverging interests to interact in order to formulate, promote and achieve common objectives.

According to Kania and Kramer (2013), MSPs are one type of collaborations that are driven by the notion of complexity in local problems and of global governance failure. The authors reiterate that local problems and global governance typically require integrative solutions involving different types of collaborations. This implies that better understanding of the systemic challenges of stakeholders in an MSP and how positive interactions between stakeholders can contribute to solving these challenges is critical to the success of the innovation process.

2.2.3 Preconditions for successful multi-stakeholder platforms

The academic partnership and collaboration literature reveals a number of critical success factors for multi-stakeholder collaboration within value chain partnerships, particularly when dealing with more ambitious and complex interventions. As cited by Dentoni *et al.* (2012b), a number of strategic factors can affect multi-stakeholder engagements. A study by Drost *et al.* (2012) shows that most value chain partnerships are influenced by four major factors: trust among actors, private sector leadership, effective involvement, and the capacity of the platform to address and mitigate institutional barriers to upgrading strategies by value chain actors.

Adekunle and Fatunbi (2012) reported that the performance of a MSP depends on: proper identification and engagement of appropriate stakeholders, keeping focus on issues related to the business of the partnership to achieve the common goal, effective interaction among stakeholders, and strong facilitation and coordination of the partnership activities. The intense price-based sector competition (Pieters *et al.*, 2012); cognitive distance among goals, values and beliefs (Pesqueira and Verburg, 2012); the number of stakeholders involved in an MSP and the geographical scope of the problem (Dentoni and

Veldhuizen, 2012; Hospes, 2012) all these are believed to increase the complexity of managing multi-stakeholder engagement processes.

A study by Kania and Kramer (2011) identified five conditions for an MSP to be successful. These include: having a common agenda; a shared management system; mutually reinforcing activities; continuous communication; and effective process facilitation. While stakeholders in an MSP may have the same overall goals, in practice, their individual objectives, requirements and contributions to the platforms always differ. However, these conditions are in most cases complementary and mutually beneficial to promote trust and respect of the roles of different stakeholders and their contribution to the functioning of the larger system.

There are five critical elements for multi-stakeholder partnerships (Brown, 2015 cited in Biekart and Fowler, 2018). First is the importance of local engagement and sensitivity in the provision of external assistance. Second is the development of cross-boundary leadership that builds a credible and strong coalition that connects to the larger context. Third is a way of mutually ‘theorising’ what needs to be done as a collective practice to bring about systemic change, which links to a fourth element of enabling and protecting innovation. The fifth is investing in embedding and sustaining institutional change with reconfigured rules and boundaries.

According to Biekart and Fowler (2018), social investment multi-stakeholder partnership initiatives are more likely to be effective if: (1) the quality of leadership conforms with processes where differences in power are acknowledged and where inclusion and voluntarism of membership are respected; (2) local contexts and actors are recognised as the final arbiters of performance; (3) a common agenda is negotiated and not imposed; (4)

mutual trust is gained and maintained; (5) commitments made are realistic and lived up to; (6) communication is open and fluid; and (7) if there is accountable governance with rules of the game that are co-defined and fairly applied. In Ethiopia, Ergano *et al.* (2010) found that where market access for livestock products is good and where the range of actors is reasonably broad and diverse, the multi-stakeholder platforms were able to realize more promising results. However, the authors argue that nurturing collective capacity of a network of organizations and individuals is a big challenge for small projects with limited mandate and resources.

According to Adekunle *et al.* (2012), value addition along market chains and improvement of infrastructure, particularly roads, communication and availability of electrical power and other infrastructures provide the basis for ensuring easy access to services required by platform members to deliver better services. These authors also reported that the presence of enabling public policies and regulations including deregulation of markets, whilst ensuring competition and compliance with minimum standards often provides a solid foundation for proper functioning of an MSP.

The creation of a network of different stakeholder groups drawn from both public and private sectors is a prerequisite to encourage cooperation, builds trust and establishes a common vision. Managing a network of different stakeholder groups requires adequate technical, financial and physical capacities of MSP actors to support capacity-building interventions and a range of other operational aspects for an MSP to perform better. The lack of sufficient resources to fund MSP processes may, to a large extent, lead to low participation of members, poor facilitation, limited information dissemination and poor implementation of activities.

Cadilhon (2013) explains that the conduct of stakeholders in the platform is highly influenced by the flow and exchange of information among MSP members, continuous communication, cooperation, coordination, participation and trust among the platform members. The literature shows that the performance of MSPs can only be achieved if members of the platforms have shared visions, well-established linkages, information flows amongst actors, conducive incentives to enhance cooperation, adequate markets, supportive policy environments and well-developed human capital (Spielman *et al.*, 2008; Brooks and Loevinsohn, 2011). A summary of factors that may hinder or enhance the performance of multi-stakeholder platforms are presented in Table 1.

Table 1: Key factors hindering or enhancing the performance of MSPs

Factors likely to enhance the performance of Multi-stakeholder platforms	Factors likely to hinder the performance of Multi-stakeholder platforms
<ul style="list-style-type: none"> • Articulation of expectations and visions. • Building of social networks. • Learning processes of multiple dimensions: <ul style="list-style-type: none"> - Technical aspects and design specifications, - Market and user preferences, - Cultural and symbolic meaning, - Infrastructure and maintenance networks, - Industry and production networks, - Regulations and government policy, - Societal and environmental effects 	<ul style="list-style-type: none"> • Creating and fostering effective linkages amongst heterogeneous sets of actors is often hindered by: <ul style="list-style-type: none"> - Different technological, social, economic and cultural divides - Different incentive systems for public and private actors, - Differences between local indigenous knowledge systems and formal scientific knowledge systems, - Social and cultural differences that can exclude some actors and ideological differences - Free market systems

Source: Klerkx *et al.* (2012).

2.3 Processes for Establishing MSPs for Food Value Chains Upgrading

The way multi-stakeholder platforms are initiated has important implications on their functioning, those who take the lead in it, who get involved and on the objectives it is trying to meet. However, there is no “one-size-fits-all” formula used to establish a well-functioning MSP (Hemmati, 2002). Each situation or issue prompts the need for participants to design a process specifically suited to their abilities, circumstances and

needs. While some authors believe that there are clear steps towards designing a multi-stakeholder platform, others think that the process is too dynamic to be planned or foreseen (Nederlof, *et al.*, 2012).

A study by Dentoni *et al.* (2012a) proposes three common steps that most of the platforms follow when they are initiated: (1) scoping phase to figure out where a platform fits; (2) analysis phase to identify key stakeholders and promising entry points; and (3) the planning phase to develop action plans of key interventions needed to achieve particular objectives. Tenywa *et al.* (2011) found that MSP formation process is a dynamic and highly context specific process that incorporates all essential ingredients for successful innovation at once and provides an opportunity for local innovations to bear while at the same time nourishing on introduced innovations.

The study by Tenywa *et al.* (2011) reiterates that MSP formation requires inspiring champions at different levels of the chain to facilitate team work and build trust among the different stakeholders. It also adds that MSP formation is a learning process that requires continuous changes to suit a given context rather than having a blueprint. According to Dusengemungu *et al.* (2014), the establishment of a multi-stakeholder platform requires the participation of a wide range of stakeholders from the private as well as the public sectors, but also their continuous commitment to actively engage in the innovation process.

Dusengemungu *et al.* (2014) also argue that the diversity of interests of stakeholders sometimes can be a constraint to the performance of the platform therefore the convergence of interests of stakeholders in the platform needs also to be addressed during the design process. Hemmati (2002) recommended that before initiating a multi-

stakeholder platform, it is first important to analyze the context under which the platform will operate, and try to understand how existing local institutions (policies, rules, regulations) and organizations work to get an idea of stakeholders' hidden and open agendas.

Analyzing the local context should also help the platform initiator to understand the existing power relations, readiness and openness of stakeholders to collaborate; and available organizational and individual technical and managerial capacities. This implies that the establishment of an MSP often requires learning from previous good and bad experiences in the area or with the same focus. Together with the understanding of local context, Hemmati (2002) emphasizes that it is always crucial to understand the degree of trust between stakeholders when initiating an MSP to ensure that the platform is well governed to enable different groups of stakeholders to participate in the decisions – making.

This is because the roles that individual and organisational members play within that particular platform need to be defined together to ensure that the platform is governed in a transparent and participatory manner (Nederlof *et al.*, 2011). However, the establishment process on an MSP requires sufficient resources and investments both in terms of time and other resources to avoid failure (Hemmati, 2002; Nederlof *et al.*, 2011; Tenywa *et al.*, 2011 and Dentoni, 2012). The lack of sufficient resources often results in stakeholders walking away from the platform, inability of members to make appropriate decisions and further enough, it can result into failure to implement the decisions reached by platform members. A failed MSP may therefore increase internal conflicts and distrust, confirm stereotypical views and diminish the ability and readiness of members to engage or collaborate in the innovation process.

However, the literature indicates some possible ways of dealing with possible conflicts of interest that may emerge within an MSP. A study by Hemmati (2002) emphasizes that MSP initiators should always consider including some conflict resolution techniques in the design process, such as preparing and instituting a Memorandum of Understanding (MOU) or Terms of Reference (TOR) to be signed by all stakeholders to serve as the basis for cooperation (Hemmati, 2002), also for accountability and compliance to the common rules governing the MSP processes.

2.4 Role and Functions of MSPs in Agricultural Research and Development

The term “Multi-stakeholder platform (MSP)” is too broad and can be referred to various settings where views are stated and discussed (Hemmati, 2002). The key function of an MSP is to create a space for various forms of interaction to bring together key stakeholders who have a common agenda to communicate, exchange, discuss issues and make decisions on particular issues that they want to address. MSPs have been adopted in ARD because of the important role they play in achieving equity and accountability in the communication between stakeholders, involving equitable representation of multiple stakeholder groups and their views (Pesqueira and Verburg, 2012).

MSPs are increasingly recognized as effective tools for developing partnerships, strengthening networks between stakeholders and they cover a wide spectrum of structures and levels of engagement. MSPs can comprise dialogues on policy issues but also can develop into consensus-building, decision-making and implementation of practical solutions. The exact nature of a Multi-stakeholder platform depends much on the issues being discussed, the objectives the platform is set to achieve, diversity of participants, scope and timelines for its operationalisation (Dentoni *et al.*, 2012b).

Multi-stakeholder platforms open the opportunities for mutual understanding among actors, building confidence, facilitate social learning and implementation of joint action (Rölling *et al.*, 2002; Martey *et al.*, 2014), while making possible actions that none of the actors could have achieved on his or her own. In the context of food value chain, multi-stakeholder platforms can perform multiple functions (Dentoni *et al.*, 2012b). A study by Vellema *et al.* (2009) on the oil seed subsector platform in Uganda shows that a platform can perform three different, but interlinked functions in a value chain.

Firstly, an MSP can create a space for learning and joint innovation, as an innovation intermediary or broker. Secondly, it can perform a governance function within the value chain to improve coordination of business activities by actors and to reduce transaction costs. Finally, a platform can perform advocacy functions to secure policy change or influence. Hemmati (2002) also argues that MSPs are meant to influence decision making processes by providing feedback to decision makers to ensure that political decisions on issues raised by platform members are taken for implementation.

As cited by Martey *et al.* (2014), the study on factors influencing willingness of farmers to participate in MSPs revealed that countries such as Peru, Bolivia and Ecuador have witnessed success in overcoming marketing constraints by using the MSPs for value chain upgrading. In Peru, for example, the MSP was very instrumental in providing transparent information on price and volumes and market governance; in Bolivia, the MSP played an important facilitating and coordinating role to link farmers' organizations with exporting companies while in Ecuador, MSP played the most extensive role in market governance and in empowering farmers' organizations and associations so that they can assume a greater leadership role in the value chain development (Thiele *et al.*, 2011).

2.5 Multi-stakeholder Approach in the Context of Food Value Chain

An agricultural value chain is usually defined by a particular finished product or closely related products, and includes all firms and their activities engaged in input supply, production, transport, processing and marketing of the product or products (Kaplinsky and Morris, 2001 cited by Swaans *et al.*, 2013). Value chains are increasingly being promoted as holistic intervention frameworks for inclusive smallholder development in evolving agri-food markets in Sub-Saharan Africa.

Food value chains are frameworks used to understand how inputs and services are brought together and then used to grow, transform, or manufacture a product; how the product then moves physically from the producer to the consumer; and how the value increases along the way (Martin Webber and Patrick, 2010). Value chain is a new approach used to bring together different partners in the food systems in their desire to integrate production, marketing, and consumption issues in the most profitable way, both in the long and in the short run (World Bank, 2006).

The value chain perspective provides an important means to understand business-to-business relationships that connect the chain, mechanisms for increasing efficiency, and ways to enable business to increase productivity and add value (Kilelu *et al.*, 2017). The literature shows that the application of value chain approaches in development interventions is perceived by actors as an opportunity for enabling inclusive smallholder innovation and enterprise development, and to contribute to the broader development outcomes such as food, nutrition and income security (Bolwig *et al.*, 2011; Seville *et al.*, 2011). Maestre *et al.* (2017) describe value chain interventions as those development activities that are directed at some specific segments of a particular value chain, or along its entire length, with the aim to achieve specific economic or social objective. The

authors argue that food value chains involve a complex array of primary producers, industrial processors, trading companies, retail outlets and final consumers and all of them must meet certain rules of regulatory bodies operating at different geographical scales.

These food value chains have conventions of their own, formal and informal rules of behaviour that are the basis of the shared cognitive frameworks that allow for coordination among those actors (Sánchez-Hernández, 2011). As highlighted by Maestre *et al.* (2017), the contribution of agri-food value chains in improving the delivery system and households' income requires a comprehensive understanding of how the chains work and the roles played by both public and private actors in making food value chains work more effectively.

The value chain approach is therefore increasingly being used in ARD as a means to guide and drive high-impact and sustainable initiatives specifically focusing on improving productivity, market competitiveness, entrepreneurship capacity development and growth of small and medium enterprises. As noted in the study Kilelu *et al.* (2017), upgrading in agricultural value chains relates to changes in production processes geared towards improving productivity and products that are increasingly defined by domestic and international quality standards and food safety measures (Bolwig *et al.*, 2011).

Kilelu *et al.* (2017) further emphasize that value chains are not fixed in terms of composition, relationships, or market positioning and that there is a competitive need to alter and improve value chains in light of strategic choices that businesses make regarding the markets in which they compete. A study by Dusengemungu *et al.* (2014) shows that the use of MSP approach in the maize value chain upgrading resulted into, among other

things, increased maize production, improved access to extension services and inputs, increased income and livelihood security of farmers, strengthened social networks of actors and improved skills and knowledge through capacity building interventions. Within food value chain perspectives, Nederlof *et al.* (2011) describe MSPs as frameworks mainly used to provide a space to stakeholders for negotiation, joint planning, working and learning together, within clear boundaries and purposes.

Mwesige (2010) illustrate MSPs as sort of institutional structures that are used to bring together different stakeholders along the food value chain in a problem solving and engaging them in a process of dialogue and collective learning that improves decision - making, action and innovation. In view of that, some authors argue that the benefits of value chain partnerships lie in the potential of MSP to create a win-win situation if all stakeholders are willing to contribute to the achievement of common goals (Bitzer *et al.*, 2010).

2.6 Sunflower Subsector Performance in Tanzania

Tanzania is an emerging economy with high growth potential. While the economy of Tanzania is relatively diversified, the agriculture sector has been and still is the main driving force of the country's economy. The agricultural sector provides about 66.9% of employment, accounts for about 23% of Gross Domestic Product (GDP), 30% of exports and 65% of inputs to the industrial sector (URT, 2016a). Economically, the agriculture sector provides important forward and backward linkages to other sectors of the national economy that are essential for producing faster growth, reducing poverty, and sustaining the environment. Despite the huge potential of the sector, agriculture in Tanzania is currently dominated by small scale subsistence farmers who operate an average of 0.2 to 2 ha of land.

The production of sunflower like any other non-traditional crop has for several decades focused on home consumption. The trend changed recently when sunflower started becoming a commercial crop grown mainly for cash and not for home consumption, and thus contributing to the edible oil industry in Tanzania (TEOSA, 2012). The production of sunflower is dominated (95-96%) by smallholder farmers who cultivate on average 2 acres of land although in many cases it is intercropped with other crops which limits its productivity per unit area.

For a long time, sunflower never experienced any government sponsored move for its production or processing until 2009 when the Government through its resolve of the *Kilimo Kwanza* (“Agriculture first”), that in pillar 4, sunflower and other oil seeds crops were mentioned as priority crops that could help in import substitution and as a climate change resilient crop. After the launching of the *Kilimo Kwanza* initiative, the Government of Tanzania supported some farmers in some selected pilot districts with input subsidies such as improved seeds and fertilisers to improve the subsector performance.

The promotion of sunflower and its resilience and adaptability to diverse agro-ecological conditions has attracted the attention of many actors to engage in sunflower business. Currently, sunflower is grown by farmers in almost all the regions of Tanzania mainly for commercial purposes. In 2010, the estimates of Rural Livelihoods Development Company (RLDC) showed that there was a national demand of at least 330 000 tons of edible oil per annum, a figure that was expected to increase as consumption is set to grow by 3% annually. Current data show that local production of both factory and small-scale extracted oils contributes to about 40% of the national edible oil requirements (URT, 2016b). In terms of production of sunflower seeds for oil extraction, the data from the

Ministry of Agriculture presented during the Parliamentary session on the 2018/19 budget indicated that sunflower production was 3 112 500 tons of seeds in 2016/17 and 3 229 220 tons in 2017/18 while it was expected to reach 3 334 394 tons in 2018/19 (URT, 2018).

The resilience and adaptability of sunflower crop to diverse agro-ecological conditions and the current market potentials of sunflower have attracted the attention of various research and development actors, particularly in the semi-arid zone of Tanzania to engage in sunflower production and to exploit the available untapped opportunities. Various initiatives have been designed across the country to promote sunflower as a means to improve income, food and livelihoods security of small holder farmers. Unfortunately, all these initiatives and achievements recorded under sunflower subsector to-date have been only made through development projects with limited or no visible contribution from the Government.

2.7 State of Household Income and Access to Food in Dodoma Region

Household food insecurity in Tanzania is both transitory and chronic in some regions. The Tanzania comprehensive food security and vulnerability analysis report of 2012 shows that food insecurity and vulnerability is present everywhere in rural Tanzania, but that it varies from one region to another (WFP, 2013). The report shows that the zones that mostly reported food shortage in the year 2010/11 were the Lake Zone (26%), Western (25%), and Central (24%). Food security has been defined in a variety of ways by different authors and organizations. According to FAO (2015), food security is achieved when “all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life”.

Kayunze and Mwangeni (2013) also reported that a household is said to be food secure if it can reliably gain access to food of a sufficient quality and quantities that allow all its members to enjoy a healthy and active life. They argue that access to food can be measured in terms of possession of resources like land to produce food, agricultural inputs, enough rainfall, labour supply, good infrastructure, political stability and possession of cash to buy food. Access to food can also be measured in terms of valued assets like livestock, farms and other assets which can easily be sold to get cash to buy food (WFP, 2013). Under these conditions, household income becomes a key determinant for improving household food security and access to food by increasing the ability of the household to buy food and other basic requirements.

Generally, households faced with food shortages, tend to adapt to a number of food insecurity coping strategies such as reduction in food intakes, dietary change, escaping of meals, distribution of family members to relatives, use of famine food, loans of grains from kin, sale of labour, and later, the sale of animals (Myeya and Kamangu, 2016). The same study shows that the number of meals eaten per day at household level can also affirm the existence of household food insecurity. For example, the study found that in Bahi District of Dodoma Region, 40.8% of the respondents were consuming two meals a day ignoring the morning meal, while 38.4% of the respondents reported to afford only one meal either lunch or dinner due to inability to obtain food either from their own production, purchase, gathering, gifts or exchanges (Myeya and Kamangu, 2016).

2.8 Conceptual Framework of the Study

The conceptual framework to guide this study was constructed based on MSP typologies, preconditions and elements of an effective MSP. The performance of MSP for value chain upgrading can be influenced by many factors including capacities of its members to

perform different tasks and the types of technologies and innovations designed to address existing value chain constraints. The performance of food value chain MSPs can also be influenced by the type of organisations, institutions and socio-cultural context under which they are set to operate. For MSPs to perform better, appropriate strategies need to be designed to stimulate effective engagement of stakeholders in the implementation of various value chain upgrading interventions aimed at addressing value chain constraints.

Factors such as the structure and membership composition of an MSP, technical and financial capacities of MSP members; the social, cultural and environmental context under which the MSP is set to operate; existing policies and frameworks and market systems have significant influence of the ways stakeholders come together to address constraints of particular food value chains. The failure of platform members to come together, combine knowledge and resources and design and implement appropriate strategies needed to address value chain constraints obviously limit the level of achievement of desired value chain development outcomes. In other words, the performance of an MSP largely depends on the capacities of its members to address the constraints faced by actors along the chain.

It is also believed that where MSPs have resulted into positive outcomes, members of the platforms will likely be more willing to come together to combine resources and skills required to address value chain constraints while mitigating internal and external factors that influence their functioning. The key elements on which the conceptual framework for this study was constructed can be organised into three major groups. The first group of elements includes various factors that are likely to influence the performance of MSPs to achieve the objectives they are set to reach, behaviour and characteristics of individual stakeholders and policy and business environment under which MSPs operate.

Second group of elements is concerned with multi-stakeholder processes i.e. all engagement processes required for the functioning of MSPs and implementation of selected upgrading strategies and innovations. The third group includes parameters or indicators against which the performance of MSPs is measured to understand their impact of the target beneficiaries and stakeholders as a whole. Based on the three groups of elements, a conceptual framework was constructed to guide this study (Figure 1).

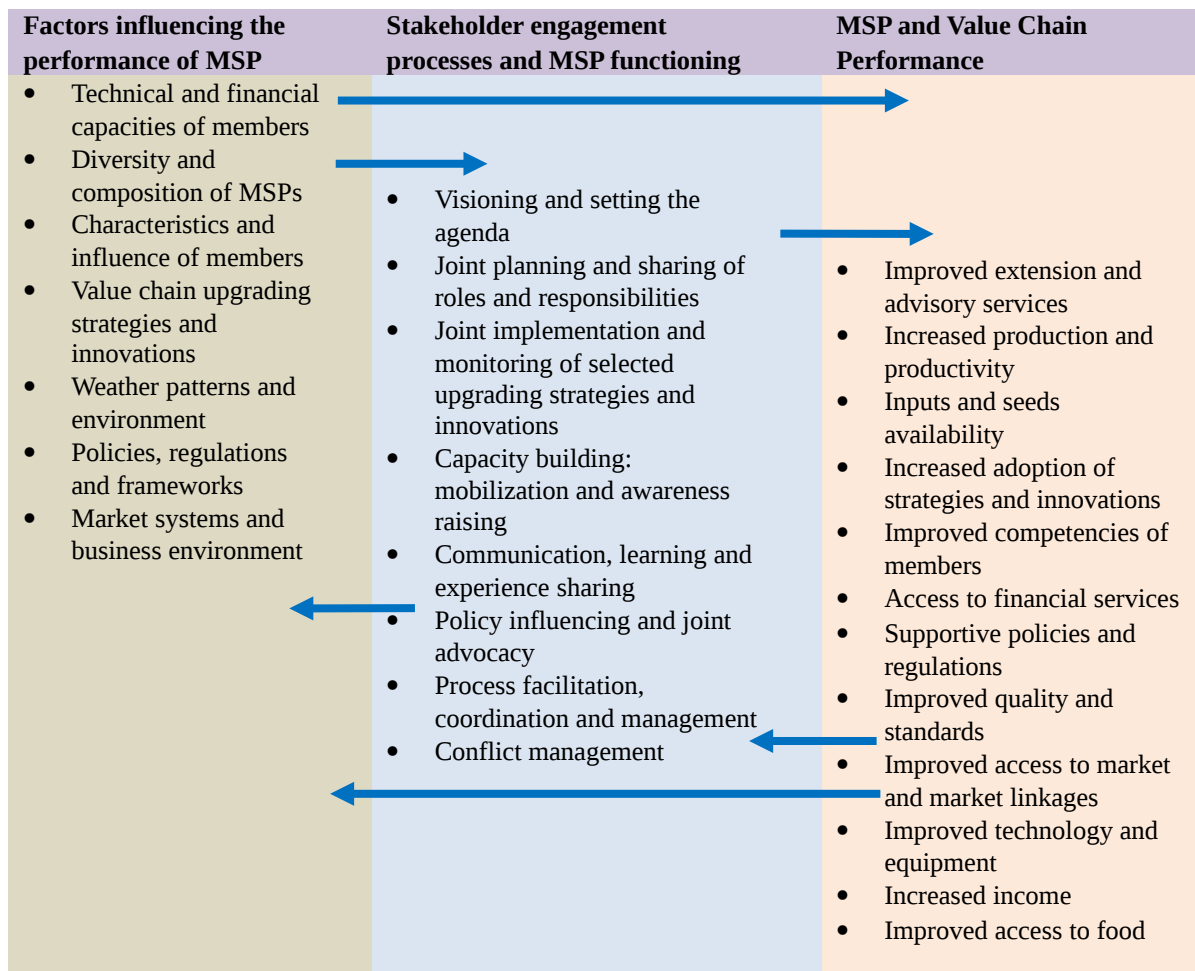


Figure 1: Relationship between multi-stakeholder platforms, stakeholders' engagement processes and factors influencing MSP and value chain performance

Source: Adapted from Cadilhon (2013)

The conceptual framework explains the relationships between the three groups of elements presented in the section above and the influence of some specific factors on the

planned stakeholder engagement processes and MSPs functioning, as well as the related impact in view of the performance of MSPs to achieve the intended development outcomes of sunflower value chain. For example, value chain outcomes such as improved access to financial services, increase in production and household income and improved policy and business environment highly depend on the capacities of MSP members and resources available to implement strategies jointly designed by MSP members to address value chain constraints.

However, proper planning, effective coordination and facilitation of planned activities as well as building the capacities of platforms members to ensure that they have competencies required to implement joint actions are key preconditions for better performance of MSPs to achieve the desired value chain outcomes. Despite a number of achievements that would be recorded by stakeholders in the value chain, the engagement processes are also likely to be constrained by a number of factors that in one way or another affect the attainment of intended value chain outcomes.

Factors influencing the performance MSPs can be grouped into internal and external factors. Internal factors can be described in terms of membership diversity and composition, characteristics and influence of members on the value chain agenda, technical and financial capacities of members to support the implementation of strategies, and type of strategies and innovations being promoted to upgrade the chain. Other factors are external.

The external factors include institutional factors such as policies, regulations and frameworks, market systems and environment under which MSPs are set to operate and other environmental factors such as climate change, changes in weather patterns and

disasters. According to Swaans *et al.* (2013), the outcomes at the value chain are directly related to the performance of MSPs. However, the attribution of the outcomes and impact at the value chain level to the performance of MSPs becomes less certain as the strengths of external factors increases. The conceptual framework was designed to understand the influence of internal and external factors on the overall performance of sunflower MSPs and associated outcomes.

Stakeholder engagement processes likely to influence the functioning of sunflower MSPs and implementation of selected upgrading strategies include visioning and setting the agenda of the platform, joint planning and sharing of roles and responsibilities, joint implementation and monitoring and capacity building. Other engagement processes include continuous communication, learning and experience sharing, policy influencing and advocacy, effective process facilitation, coordination and management of the platform as well as conflict management activities.

The framework was also very useful to investigate the functioning of sunflower platforms and compliance of members on some specific tasks, and role of the coordination committees that were established at the community, district, and regional levels. The performance of the MSPs was measured according to the indicators relevant to the objectives of sunflower value chain initiatives. These include improvement in extension and advisory services, increase in production and productivity, availability and access to inputs and seeds, increase in adoption of strategies and innovations by stakeholders, improvement in competencies and skills of members to deliver quality services and access to financial services.

Other indicators are concerned with improvement and availability of supportive policies and regulations, improvement in quality and standards of sunflower products, access to market and market linkages, access to improved technology and equipment, increase in household income and access to food by smallholder farmers. The conceptual framework was therefore applied to understand to what extent the outcomes associated with the above indicators were achieved in view of MSPs performance.

CHAPTER THREE

3.0 METHODOLOGY

3.1 Description of the Study Area

The study was conducted in Chamwino, Dodoma and Kongwa District Councils of Dodoma Region. Despite the increasing recognition of sunflower by the government and other stakeholders as a crop with high market potentials to improve the social and economic conditions of smallholder farmers in the semi-arid zone of Tanzania, the performance of the subsector has remained poor (URT, 2016b). Despite the adoption of MSP approach in the upgrading process of sunflower value chain in the semi-arid zone of Tanzania, the question whether or not the use of MSP approach has provided appropriate solutions to the challenges faced by stakeholders in the subsector remains unanswered.

The three districts were selected for this study due to long time presence of multi-stakeholder collaboration alliances which were established to promote sunflower value chain development. Being one of the regions in the semi-arid zone and the presence of sunflower MSPs make Dodoma Region a better study area to generate empirical evidence on the contribution of MSPs for food value chains to desired outcomes. The regional socio-economic profile report of 2016 showed that agriculture is the main economic activity of the people in Dodoma Region, whereby about 71% of employed people are engaged in agriculture (URT, 2016c).

The report shows that the main occupation for the majority (72%) of working residents of Dodoma was farming. Commercial agriculture and food crops employ more persons than any other occupation in the region (70%), followed by trade and commerce (5%). Dodoma Region is characterized by a food system primarily based on sorghum and millet,

integrated with livestock keeping (Mnenwa and Maliti, 2010). Sorghum, millet, rice and maize are the main food crops while groundnuts, simsim, sunflower and grapes are grown for commercial purposes. The average rainfall in Dodoma is relatively low and unpredictable in frequency and amount, ranging between 350 and 500 mm per year.

The long drought and low rainfall patterns make the region more prone to high food insecurity every year. The literature shows that Dodoma is among the three regions in the central part of Tanzania with the highest proportion of households that are food insecure (WFP, 2007; Myeya and Kamangu, 2016). According to the Tanzania comprehensive food security vulnerability analysis report of 2012, 20% of households in Tanzania faced at least one situation when there was not enough food to feed members (WFP, 2013). The report showed that the zones that mostly reported food shortage were the Lake Zone (26%), Western (25%), and Central (24%). Of households facing food shortage, on average they were short of food for around 3.5 months in total per year. Reasons for food shortages indicated in the report by WFP (2013) were largely linked to weather whereby in 2010/11, 25% of households reported being severely affected by drought for the previous five years.

The promotion of sunflower value chain development aimed at enabling farmers in the semi-arid-zone of Tanzania to cope with the existing climatic challenges while improving their incomes and access to food at household level. Sunflower was promoted because of its resilience and adaptability to diverse agro-ecological conditions and for its potential to earn income to smallholder farmers which in turn, would help them to improve their living conditions. The existence of long term multi-stakeholder collaboration in the three study districts and the rich experience of multiple stakeholders in the sunflower MSP

processes make the three districts a good representative study area to answer the research questions for this study.

3.2 Research Design

The study adopted a cross-sectional research design involving a combination of qualitative and quantitative methods of data collection. Cross-sectional research design is usually used for descriptive studies or when the purpose of the study is to find the outcomes of interest for the population or subgroups within the population at a given time and place (Levin, 2006). In this research, the design was used to collect the information about multi-stakeholder engagement processes and social economic impact associated with these processes on the living conditions of smallholder farmers. It helped to capture information needed to compare different variables set to measure sunflower value chain outcomes in view of the performance of MSPs and variables set to measure the impact of MSP processes in improving household income and access to food by farmers in the study area.

The dynamics within sunflower MSPs and the impact attributed to the performance of MSPs and stakeholders' engagement processes was assessed over three years of effective engagement of sunflower actors in the MSP processes i.e. from 2012 to 2014. Various indicators to capture changes in the value chain outcomes in view of sunflower MSPs performance were constructed guided by the objectives of the sunflower value chain initiatives. The three years of multi-stakeholder engagements were sufficient to provide data on the dynamics within MSPs and their impact on the desired value chain outcomes, changes in household income and access to food by farmers in the study area.

3.3 Study Population and Sample Size

The study population included all stakeholders who had a role to play in the sunflower value chain upgrading interventions residing or operating in the three districts where sunflower value chain upgrading interventions were implemented. These include sunflower producers, leaders of sunflower processing and marketing cooperatives (PMCs), leaders of the association of PMCs, individual and company processors, wholesalers and retailers, urban traders, and middlemen. Other actors were local government leaders, district extension and cooperative officers, leaders of rural financial institutions, agro-dealers as well as NGO partners who were involved in the coordination of the value chain activities.

According to the Tanzania population and household census of 2012, the total population of Dodoma Region was estimated at 2 083 588 people, while that of Kongwa District was 309 973 people, 410 956 people in Dodoma District and 330 543 people in Chamwino District (URT, 2013a). As far as sunflower value chain upgrading is concerned, the documentary review showed that the initiative led by RLDC intended to directly benefit about 48 000 smallholder farmers excluding other stakeholders while the one led by Oxfam Tanzania targeted to reach 500 smallholder households.

Other direct beneficiaries were individual and company processors and service providers operating along sunflower value chain. The sample size for respondents of the household survey and participants in FGDs were determined by using Cochran's (1977) formula provided in the Appendix 4. A total of 397 respondents were interviewed. Among them, 192 respondents (48.4%) were women and 205 respondents (51.6%) were men. A total of 251 respondents were sunflower producers who participated in the household survey and 146 were producers who participated in the FGDs. A total of 37 key informants (KI)

representing other stakeholder groups were also interviewed. A summary of the total stakeholders interviewed is presented in Table 2.

Table 2: Characteristics of respondents consulted during data collection process

Village	Respondents grouped per data collection method			
	Household survey	Male FGDs	Female FGDs	KI informants
1. Mkutani	40	12	10	-
2. Banyibanyi	40	12	12	-
3. Msunjilile	37	8	10	-
4. Sejeli	32	10	10	-
5. Chalinze	40	10	10	-
6. Machali	36	12	12	-
7. Chinangali	26	10	8	-
8. Other stakeholders	-	-	-	37
Subtotal per method	251	74	72	37

3.4 Sampling Techniques

Stratified sampling method was applied to ensure that every category of the MSP members is represented in the data collection process. From each stakeholder category, purposive sampling and quota sampling techniques were applied to select respondents. Purposive sampling technique was applied to select villages where data collection was conducted and household representatives who were interviewed. Specifically, the study targeted stakeholders who were directly involved in the sunflower value chain upgrading interventions in the study area.

Purposive sampling technique was also applied to get good representation of male and female household representatives to participate in the FGDs which were run separately for male and female participants. Households are characterised by diverse activities and tasks performed by individual members to produce goods and services. However, the decision making power on the allocation and use of household resources differs from one household to another. The aim of organising female and male FGDs separately was to

ensure that issues related to power relations within the households are captured during the interview process.

During the implementation of sunflower value chain initiatives, the household constituted the engine for stakeholder engagements and the centre where all social and economic changes were expected to take place. A household was used as study unit for this research to understand the dynamics and social-economic changes attributed to the performance of MSPs that took place within households involved in the sunflower value chain upgrading processes. As it has been a culture for most development projects, only few households were organized into small groups to implement selected successful upgrading strategies in each village. The formation of sunflower producer groups was done on a voluntary basis, depending on the interest and experience of farmers, hence members of the groups were free to join and exit the groups at any time.

To get respondents to the household survey interviews and FGD participants, purposive sampling and snowball sampling techniques were applied. Key informants were selected based on the role they played in the MSPs and information needed that could not be captured through household survey and FGDs. Respondents to household survey and FGD participants were selected from seven villages which were involved in the sunflower value chain upgrading initiatives. These villages were selected based on their engagement in the sunflower value chain upgrading initiatives and these included Mukutani, Sejeli, Banyibanyi and Msunjilile villages of Kongwa District and Chalinze, Chinangali and Manchali villages of Chamwino District.

With the help of village leaders and field extension officers from the lead implementing partners, the first step was to organise a meeting of sunflower producers present in each

village to explain the purpose of the study. These meetings enabled the data collection team to get the lists of members of sunflower producer groups from which respondents were purposively selected. The respondents were selected depending on the specific functions they had in their respective groups and community based platforms such as the agricultural marketing cooperative societies (AMCOS), producer and marketing cooperatives (PMCs) and coordination and management platforms. Key informants were selected depending on the key functions they performed in the MSP processes, positions they occupy in the community and in the organizations they represent depending on their availability.

3.5 Data Collection Methods and Tools

Data collection involved qualitative and quantitative methods to collect data, enable triangulation of findings and to increase the validity of the results. Data collection methods used included household survey, key informant (KI) interviews, focus group discussions (FGDs) and documentary review. Data collection tools included household survey questionnaires (Appendix 1), key informant interview guide (Appendix 2) and FGD checklist (Appendix 3). A detailed description of data collection methods and tools is provided in the sections below.

3.5.1 Household survey

A household survey was conducted in seven villages of Kongwa and Chamwino district councils. A structured questionnaire was used whereby 251 respondents participated in this survey. All respondents were sunflower producers representing direct beneficiary households involved in the sunflower value chain interventions. Household survey captured demographic information and social economic information. It captured data about land issues and stakeholder engagement; sunflower production, price and income;

issues of market and market linkages; issues related to financial services and issues related to food availability and access by farmers at household level. Data collected through household survey was used to compare changes attributable to MSPs performance at household level by comparing data of 2012 to that of 2014.

3.5.2 Key informant interviews

Key informant interview process involved 37 respondents selected from different stakeholder categories other than sunflower producers. Key informants include value chain support organisations, processors, wholesalers and retailers of sunflower oil, urban traders and middlemen, community leaders, lead farmers, district extension officers, cooperative officers, financial institutions, agro-dealers and inputs suppliers, lead implementing NGOs and some decision makers from the local government authorities. This method was used mainly to access information and documents which could not be accessed by using other data collection methods.

Guided by the objectives of this study, a key informant interview checklist was used to collect general data about the culture, attitude, perceptions and lived experiences of stakeholders regarding sunflower crop development. Key informant interview questions covered the following aspects: project background and context, constraints of sunflower value chain, key intervention strategies, diversity and composition of actors in the value chain, stakeholder selection and role distribution. Other aspects were related to institutional arrangements, linkages and collaboration; stakeholder engagement processes; platforms formation, coordination and management, factors influencing the functioning of MSPs and challenges encountered; social economic changes at household level; highlights of achievements at individual, organizational and value chain levels as well as communication and dissemination pathways of value chain outcomes and lessons learnt.

3.5.3 Focus group discussion (FGD)

Focus group discussion was the third method used to collect data for this study. FGD is the most commonly used method in qualitative research to get views and opinions from people with similar backgrounds about specific themes of interest. FGD method was used to conduct interviews with small groups comprising heads of households that were directly involved in the sunflower value chain upgrading initiatives. The method was used to capture sunflower producers' perceptions on issues related to social economic changes they have recorded at household level that are attributable to their engagements in the sunflower value chain interventions and in view of the performance of sunflower MSPs. FGDs were organised in all seven villages covered by this study.

In each village, two separate FGD sessions were organised, one involving women and the other one involving men but separately to capture intra-household power relations. The size of FGD groups used in this study ranged between 8 and 12 participants. This number of FGD members was very close to the range proposed by Bryman (2004) and Masadeh (2012) who suggested that participants in a focus group discussion should range between 6 to 10 participants. In total, 14 FGDs and seven feedback meetings were organised involving 146 participants of which 72 (49.31%) were women and 74 (50.69%) were men.

FGDs focused on the following aspects: constraints of sunflower and strategies used to address them; achievements recorded as results of their engagement in the value chain; knowledge and skills gained through MSPs processes and access to services and financial capital. Participants in FGDs were also asked to mention the changes they have recorded in relation to sunflower production, access to markets, changes in household income from sunflower sales and other sources, changes in the availability and access to food at

household level. Other aspects captured from FGDs were related to stakeholder engagement processes, coordination and management of community based committees, factors that influenced their participation and engagement, and factors that influenced sunflower MSP performance to achieve the intended value chain development outcomes.

3.5.4 Documentary review

Documentary review was done to collect and analyse data from existing project documents to support empirical findings of this study. Documentary review was applied to get information related to sunflower value chain upgrading interventions that were supported by RLDC and Oxfam Tanzania in Dodoma Region. The documents reviewed include progress reports, evaluation reports, funding proposals, constitutions of producer groups and processor associations, workshop proceedings and meeting minutes of MSPs coordination committees. The reviewed documents were obtained from different sources including district offices, RLDC, Oxfam Tanzania, lead implementing NGOs, processing companies, processors' associations, farmers' groups and from online searches. Data captured through documentary review include sunflower value chain constraints and strategies used to address them; MSP formation, coordination and governance; stakeholders' identification and member selection processes.

The documentary review was also used to capture information related to stakeholder engagement processes and role distribution; and evidence on the outcomes of MSPs processes and value chains upgrading interventions. Through documentary review, the study was able to capture the historical background, context of sunflower value chain performance in Dodoma Region in particular as well as policy implications and improvement in the sunflower business environment. The information from secondary sources was used to complement information generated from primary data and for triangulation of the findings.

3.6 Data Analysis and Interpretation

A combination of quantitative and qualitative methods was applied to analyse data for this study. Qualitative data from key informant interviews, focus group discussions and secondary sources were analyzed using content analysis method. Content analysis was used for identifying, coding and categorising the primary patterns of the data. Thereafter, the data were organized into different themes according to the views and opinions expressed by respondents and interpreted based on the research objectives and questions.

Content analysis was used to identify key aspects related to different modalities and principles that guided the establishment of sunflower MSPs in the study area, selection of key actors in the value chain and their role, aspects related to MSPs coordination and governance as well as different levels of MSPs operations. This analysis method was also used to analyse information about the formalization of sunflower MSPs, their functioning in the sunflower value chain upgrading process and factors that influenced the performance of MSPs to achieve specific development outcomes of sunflower value chain and impact of MSPs processes on social economic conditions of farmers in the study area.

Quantitative data from the household survey were analysed using the Statistical Package for Social Sciences (SPSS 16.0) and Excel computer programmes. Quantitative data were subjected to descriptive and inferential analyses to generate some measures of central tendency and measures of variability among and between variables such as frequencies, means and percentages and to make inferences from those variables on the performance of MSPs and some specific changes in households' socio-economic conditions over three years of MSPs processes.

A paired samples t-test was performed to determine the level of statistical significance between the average means of variables that were used to measure the changes in value chain outcomes and changes recorded by farmers in view of MSPs' performance including changes in sunflower production, household income, market price, and food availability and access at household level. Descriptive analyses were computed to get percentages of stakeholders who responded to some specific interview questions related to land allocated for sunflower production, constraints limiting sunflower subsector performance, strategies for addressing existing sunflower constraints, stakeholders' engagement in the MSP processes and also aspects related to food availability and access at household.

Variables which were used to compute descriptive and inferential analyses were sunflower production, market prices, household income, constraints of sunflower and intervention strategies used to address them. Other variables were farm size for sunflower production, value chain achievements, factors that limited MSPs performance, buyers of sunflower, number of meals per day, households with food shortage and food secure households. The computed means were subjected to a paired samples t-test to determine the level of statistical significance attributable to the performance of sunflower MSPs and stakeholder engagement processes in the value chain.

3.7 Data Validity and Reliability

Validity and reliability are important steps to consider for conducting good qualitative and quantitative research. Generally, the appropriateness and accuracy of measurement have serious implications on the research findings. To ensure quality of the research findings, the reliability of data was enhanced through combining qualitative and quantitative methods to collect similar information. The reliability ensures that various research tools

used generate the same data on repeated trials. For instance, qualitative methods are associated with interpretative approaches through which the researcher can get a deeper understanding of specific phenomena, perceptions and views of respondents.

Quantitative methods were used to test the assumptions underlying the use of MSP approach in the sunflower value chain upgrading that anticipate that the use of the approach would result into increased household income and access to food for those households involved in it. The impact of sunflower MSPs on household income and access to food was assessed through comparing variables measured with numbers and analyzed in statistical procedures to determine whether the predictive generalization of the assumptions hold true. Through the research study, continued communication with respondents was enhanced, repeated visits to the research study sites and frequent contacts with value chain actors were conducted to validate the information and get additional clarity on issues that were not clear at the beginning.

The use of structured questionnaires to collect socio-economic data at household level, checklists to collect information from key informants and participants in FGDs as well as the use of data from secondary sources aimed at enhancing data validity. In each village, one validation workshop involving 12 participants (6 men and 6 women) selected from male and female FGDs was organised to share the findings from the two separate groups for validation. Research assistants were also trained to enhance their understanding about the use of different data collection tools designed for this study. Prior to actual data collection, a pre-testing of data collection tools was performed and improvements made accordingly to ensure data validity. A triangulation of data from primary and secondary sources was also performed to ensure reliability of data.

CHAPTER FOUR

4.0 RESULTS AND DISCUSSION

The research findings presented in this chapter are organised in accordance with the specific objectives. The first section of the chapter discusses the findings for specific objective number one which was concerned with the modalities and principles which were followed by sunflower value chain initiators to establish MSPs to implement selected upgrading strategies and innovations. The findings presented under this section provide empirical information that highlights the state of sunflower value chain upgrading in the study area; the nature and composition of sunflower MSPs in terms of membership; the process of selecting MSP members and selection criteria and the way these MSPs were coordinated and managed to implement selected strategies. Other aspects which are covered under this objective relate to key steps that were followed to set up MSPs for sunflower value chain, their levels of functioning and formalisation process to get legitimacy to undertake specific functions.

Section two presents the findings for specific objective two which was concerned with the effects of stakeholders' engagement processes on the performance of MSPs to achieve the desired outcomes of sunflower value chain. The findings presented under this objective highlight key constraints that limited the performance of sunflower MSPs in Dodoma Region, strategies that were used to address these constraints to improve the performance of the subsector and an overview of the implementation framework used to upgrade sunflower value chain in the study area. Other aspects covered under this objective include the level of achievements of sunflower value chain outcomes attained by stakeholders in view of sunflower MSPs performance. It was anticipated that the use of MSP approach would improve stakeholders' capacity to deliver better services, improve

availability and access to improved seeds and other inputs, production and marketing of sunflower, market competitiveness for processors and household income from sales of sunflower. The section also presents highlights of gender aspects with regards to women and men participation in the MSPs processes, access to financial services, leadership, management and coordination of MSPs activities and challenges related to stakeholders' engagement in the MSP processes for food value chain upgrading.

Section three of this chapter presents the findings for specific objective three which investigated the impact of sunflower value chain interventions in improving the living conditions of smallholder farmers at household level in view of MSPs performance. The findings under this section highlight changes in household income recorded by farmers in the study area attributable to their engagement in the sunflower MSPs processes, the state of availability and access to food by farmers at household level in view of MSPs performance.

Section four presents the findings related to specific objective four which was concerned with the identification of factors that influence the performance of MSPs for food value chains. Under this objective, four major factors were identified to have significant impact on the performance of sunflower MSPs. These include structural factors such as the nature and membership composition of MSPs; institutional factors such as policies, rules, regulations and frameworks; organisational and individual competencies of members to manage MSP processes; and motivational factors and incentives for members to maintain focus on the MSP agenda.

4.1 Establishment of Multi-stakeholder Platforms for Sunflower Value Chain

Upgrading in Dodoma Region

The entry point for the implementation of sunflower value chain upgrading interventions was the establishment of multi-stakeholders' platforms to create a space for stakeholders' interaction, experience sharing and learning. The first objective of this study was to determine the modalities and principles which were followed by RLDC and Oxfam Tanzania to establish sunflower value chain upgrading MSPs in Dodoma Region. Under this objective, the study explored also the aspects related to sunflower value chain constraints and strategies which were used to address them, coordination and management of sunflower MSPs, membership composition and functioning of sunflower MSPs in Dodoma Region. A detailed account of the findings under this objective is provided in the subsections below.

4.1.1 Sunflower value chain upgrading initiatives in Dodoma Region

To understand the key steps and principles that guided the establishment of sunflower MSPs in Dodoma Region, it is imperative to have first an overview of specific upgrading interventions that were implemented with the aim to address sunflower constraints faced by different actors along the value chain. The findings on sunflower value chain upgrading interventions implemented in Dodoma were generated through documentary review, household survey, FGDs and KI interviews. During key informant interviews with sunflower processors that preceded the documentary review and FGDs, it was found that sunflower value chain upgrading process in the semi-arid zone of Tanzania and in Dodoma Region in particular was supported by the Rural Livelihood Development Company (RLDC) and Oxfam Tanzania.

The documentary review revealed that sunflower value chain upgrading process in Dodoma Region was done through two different initiatives. The first initiative was led and supported by RLDC with the aim to improve market systems development to enhance sunflower subsector performance and attain a meaningful impact to farmers' livelihoods (RLDC, 2008). The second initiative was led and supported by Oxfam Tanzania and aimed to optimize sunflower production and income of smallholder farmers (Oxfam, 2012). During focus group discussions and key informant interviews with sunflower producers in the study area, the respondents were asked to mention the main objectives that sunflower value chain upgrading interventions aimed to achieve and strategies that were used to address them.

Although the two initiatives were designed differently, implemented by different actors and targeting different geographical locations, it was found that regardless of specific interventions designed for each of the two initiatives, the ultimate goal was the same. NGO officials at RLDC, Oxfam Tanzania and lead implementing organisations explained that the two sunflower value chain initiatives aimed at improving the living conditions of smallholder farmers in the semi-arid zone of Tanzania, through increased household income and access to food.

Specifically, sunflower value chain interventions supported by RLDC focused on strengthening the capacities of sunflower processors to improve their competitiveness and on supporting the creation of an enabling policy and business environment for sunflower business. On the side of Oxfam Tanzania, it was found that sunflower value chain upgrading interventions mainly focused on strengthening the capacities of smallholder farmers as a means to improve sunflower productivity, value addition through supporting processing interventions and marketing of sunflower products to earn income for farmers.

The review of project documents and reports revealed that sunflower value chain upgrading initiatives in Dodoma Region adopted market systems (value chain) development approach as a means to increase incentives for actors in the value chain, which in turn would improve sunflower subsector performance, increase sunflower productivity, trade, and ultimately economic returns to poor smallholder producers. According to project managers at RLDC and Oxfam Tanzania, the process of designing sunflower interventions in Dodoma mainly capitalised on long term experience the two organisations and other stakeholders had in implementing development projects that involve multiple actors in its implementation process.

In general, sunflower processors and NGO officials who led in the implementation of MSPs activities reported that sunflower value chain upgrading interventions designed under the two initiatives had many elements in common. For instance, the Managing Director of one processing company operating in Kizota area of Dodoma town shared his experience on some observable similarities between the two initiatives as far as MSP formation and functioning are concerned. He said:

“... the entry point for these initiatives was first to identify key actors who had vital role to play in the value chain upgrading process followed by the establishment of MSPs aimed to stimulate participation and engagement of key actors in the implementation of selected innovations and strategies to upgrade sunflower value chain...” (KI, Kizota, Dodoma town).

With regards to the objectives of the two sunflower value chain upgrading initiatives, it was found that the two value chains were designed to address various constraints faced by stakeholders along sunflower value chains. The main constraints that were found to have negative impacts on the performance of sunflower subsector include the effects of climate

change that is manifested through low rains and prolonged drought; lack of access to reliable markets; pests and diseases; poor agronomic practices used by farmers in the production of sunflower; and lack of access to improved seed varieties and other farm inputs. Other constraints include the use of poor farm implements and tools; lack of access to financial capital; poor soil fertility; lack of improved storage facilities; and lack of access to modern processing facilities.

These constraints are very complex in nature and thus require the involvement of multiples stakeholders with different expertise and resources to address them. While there are constraints that may be addressed through building the capacities of stakeholders in the value chain, others may require institutional collaboration and partnership building to pull together the technical, material and financial resources needed to address such particular constraints. Different strategies and activities were therefore designed to address the constraints faced by sunflower value chain actors in Dodoma Region. Figure 2 presents a summary of strategies and activities that were used to address sunflower value chain constraints at farmer level that were identified through the household survey.

The use of different strategies to address sunflower constraints implies that there is no single way of addressing specific agricultural development challenges in a successful manner; rather a combination of different methods and strategies is required. KI interviews revealed that the choice of intervention strategy was highly influenced by the resources availability and internal capacities of value chain actors to implement it. It was found that the two value chain initiatives adopted MSP approach as means to create a space for stakeholders' interaction and collaboration in the implementation pathways.

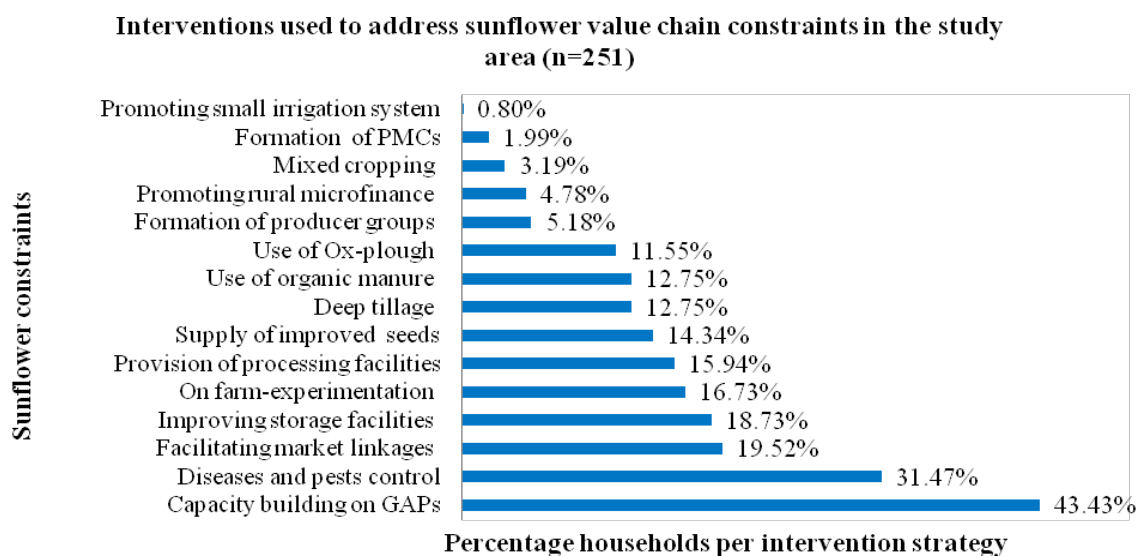


Figure 2: Interventions used to address sunflower value chain constraints in Dodoma

Source: Household survey

The views from NGO officials, district extension officials and processors revealed that RLDC and Oxfam Tanzania had a strong belief that the use of MSP approach would be the best approach for addressing key constraints facing actors in the sunflower value chain. These findings are supported by other studies which have found that MSPs are believed to have a greater contribution to increasing the capacity of members to analyze and solve technical problems and address systemic challenges (Mitchell and Nicholas, 2006; Nederolf *et al.*, 2011).

However, the way food value chain interventions are designed depends highly on the constraints that they are set to address, the context under which multi-stakeholder collaborations will take place and technical and financial capacities of key actors in the innovation process to support value chain interventions. Some authors have reported that the establishment process of an MSP to implement strategies and innovations designed to address value chain constraints requires sufficient resources and investments both in

terms of time and other resources to avoid failure (Hemmati, 2002; Nederlof *et al.*, 2011; Tenywa *et al.*, 2011 and Dentoni, 2012). The understanding of the approach and intervention strategies that were used to upgrade sunflower value chain in Dodoma Region raises the curiosity to understand how sunflower MSPs were set.

4.1.2 Steps for setting up sunflower MSPs in Dodoma

The process of setting up an MSP is complex and dynamic in nature. According to the District Agricultural Extension Officers and officials from RLDC, Oxfam Tanzania and INADES Tanzania, there was no single way or standard guidelines to be followed by sunflower value chain support organisations in setting up sunflower MSPs in Dodoma Region. The findings from documentary review showed that the nature and composition of sunflower MSPs depended on the problems the platforms were set to address, available resources and innovations or strategies to address it, willingness and competencies of individual actors, the socio-economic conditions of actors and the policy and business environment in support to MSP operations.

Because of that, the process of setting up an MSP requires sufficient resources to support a number of operations that are needed for it to be in place and function. A documentary review and key informant interviews were conducted to understand key steps which were followed in the establishment of sunflower MSPs in Dodoma Region. The study found that the design process of sunflower MSPs was participatory in nature and involved major stakeholder groups operating along the chain. The review of project documents and key informant interviews revealed that sunflower value chain interventions emerged from the recommendations from the evaluation reports of development projects which were implemented by RLDC and Oxfam Tanzania in the study area. The evaluations identified

sunflower as a crop with high market and economic potentials, capable of optimising income and improving the living conditions of smallholder farmers in the study area.

The agenda of supporting interventions aimed to upgrade sunflower value chain emerged from the recommendations in the evaluation reports for previously implemented projects. The review of sunflower project documents and progress reports at RLDC and Oxfam Tanzania revealed six key steps which were followed by the two organisations to establish MSPs to implement a set of selected innovations and strategies for sunflower value chain upgrading. The first step was to conduct in-depth analysis studies of sunflower value chain to identify key constraints faced by sunflower actors in the area, opportunities available to address the constraints, and stakeholders who were active in the sunflower value chain.

Sunflower value chain analyses were also used to identify the social, cultural and environmental contexts of the locations where sunflower platforms would fit. An in-depth analysis of sunflower value chain prior to setting up MSPs was a pre-requisite and important step to go through to identify potential actors, define their needs, identify value chain constraints, available opportunities and identify promising strategies to address identified constraints for improved performance of the subsector. Nederlof *et al.* (2011) also found that knowing better the local context and the operational mode of key institutions working along a particular value chain can help MSPs facilitators to understand the organisational and individual capacities of actors needed to engage in the MSP implementation pathway.

The second step was the selection of potential stakeholders who would be involved in various MSP processes and to kick-start and lead the implementation of proposed value

chain activities. Members of sunflower MSPs were selected from different stakeholder categories operating along sunflower value chain in the study area. The third step was to approach selected MSP members to discuss about sunflower value chain interventions, ways of collaboration and seek for future partnership. This step was followed by inception workshops which brought together all key stakeholders willing to participate and contribute to pre-defined sunflower value chain development outcomes.

The inception workshops were used to explain market development (value chain) approach that would be used to implement sunflower value chain interventions and to discuss the existing challenges, available opportunities and appropriate ways (innovations, strategies) of improving the subsector performance. The fifth step was participatory planning and role distribution to selected MSP members based on their competencies and available resources to support their participation. The planning process took place through a series of stakeholders' meetings and workshops which involved all key actors operating along sunflower value chain in Dodoma Region.

The planning process was followed by the implementation of selected strategies and innovations, continuous monitoring of value chain outcomes and recruitments of new platform members depending on the needs and competencies required to achieve specific value chain outcomes. The implementation of selected strategies and innovations required better understanding of the context under which sunflower MSPs were set to operate, competencies and resources of individual MSP members and key tasks to be accomplished by various stakeholders.

The above six steps which were followed to set up sunflower MSPs in Dodoma Region align with key steps that most platforms follow. According to Nederlof *et al.* (2011), the

establishment process of most platforms involved the following steps: (i) scoping study to figure out where a platform fits; (ii) analysis of stakeholders and promising entry points and (iii) planning and implementation of promising strategies. The scoping process refers to the initial efforts made by MSP initiators to narrow down the platform's topic, understand its functioning along with the context where the platform is set to operate.

The analysis step concerns both the initial stakeholders' mapping and selection and the identification of promising action entry-points in a specific value chain or thematic areas while the planning process entails a further narrowing down of the main points raised from the joint analysis and defining of a clear strategy for action. Nevertheless, while some authors believe that there are clear steps to follow when designing an MSP; others argue that the process of designing an MSP is too dynamic to be planned or foreseen (Dentoni *et al.*, 2012b).

One technical staff member at INADES Tanzania who coordinated sunflower MSPs activities in Chamwino and Kongwa Districts also stressed the importance of undertaking a value chain analysis before establishing an MSP. During key informant interview, she had the following view:

“...as sunflower crop was being promoted for the first time as cash crop in the two districts, conducting a market analysis for sunflower value chain was an important step not only to identify constraints and opportunities, but also to know key players operating along the chain and their roles. The analysis provided the basis for identifying feasible modalities of engaging stakeholders in the MSP activities...” (KI, Dodoma town).

The findings from documentary review and key informant interviews explain that the process of establishing sunflower multi-stakeholder platforms is a continuous interactive and learning process. For instance, the establishment process of sunflower MSPs required learning from previous experiences to understand stakeholders' agenda, existing power relations and readiness of actors to collaborate. To ensure effective participation of key stakeholders in the implementation of sunflower MSP activities, Oxfam and RLDC supported capacity building programmes to sunflower MSP members to improve their competencies that would enable them to deliver better services and for accountability purposes.

Another important requirement was to ensure that there are adequate technical capacities, financial and physical resources needed to support the implementation of sunflower value chain activities. Capacity building interventions were very crucial to improve the competencies of platform members so that they can adequately and efficiently perform their functions in the MSP processes. According to key informants, various capacity building interventions were designed based on the stakeholders' needs, specific objectives sunflower MSPs were set to achieve, and competencies required for the implementation of specific tasks to achieve the desired sunflower value chain outcomes.

According to key informants, stakeholders' consultative workshops, meetings and capacity building interventions were instrumental to ensure that members of sunflower platforms have adequate capacities to address the constraints of sunflower subsector and the desired outcomes are achieved. Some studies have also found that MSPs for food value chains were very useful to strengthen social networks of actors and improve the skills and knowledge of platform members through capacity building interventions (Dusengemungu *et al.*, 2014). Mwesige (2010) also found that MSPs were used to engage

different actors in the chain in a process of dialogue and collective learning that in turn improves decision - making, action and innovation.

4.1.3 Sunflower MSPs members' identification and selection criteria

The analysis of secondary data revealed that one of the important pre-conditions for sunflower MSPs to achieve the desired development outcomes was proper selection of key stakeholders to be assigned specific tasks to lead and accomplish in the implementation of value chain interventions. It is therefore imperative to understand how these stakeholders were selected and assigned roles to play in the sunflower value chain upgrading process. The findings pertaining to stakeholders' identification process were generated through documentary review, key informant interviews and FGDs. Key informant interviews revealed that prior to the identification of potential stakeholders, the first activity was to define and agree on selection criteria that would be used to qualify individual and organizational members of sunflower MSPs and cluster them depending on their key functions in the value chain.

The documentary review and key informant interviews revealed that the main categories of stakeholder groups who were involved in the two sunflower value chain upgrading interventions include producer farmers, farmer organizations (groups and networks), individual and company processors, traders and district extension workers. Others were private service providers (NGOs), academic institutions, research and training institutions, formal and informal financial institutions, agro-dealers, and decision makers from strategic departments and ministries responsible for agriculture, industry and trade.

The findings from the documentary review showed that the selection of sunflower MSPs members was guided by a number of criteria which were initially set by RLDC and

Oxfam Tanzania in their project proposals. The criteria which were used to select MSP members and assign them roles to play in the MSP processes were:

- Level of involvement in the sunflower business
- Representation of key stakeholder group categories
- Long term presence and operation in the project areas
- Experience in working with multi-disciplinary actors in development field
- Technical expertise and competencies to implement development project
- Availability of resources and willingness to support MSP activities
- Compliance with donor' rules and regulations of financial management

As a platform member may have one or more roles to play in the value chain, setting specific criteria to characterize MSP members prior to implementation is very crucial. The selection criteria enabled MSPs facilitators to identify members who were expected to bring impact on the implementation of sunflower value chain activities and achievement of desired outcomes. The first criterion was the level of involvement of actors in the sunflower business together with the services or activities they were implementing along the chain. This criterion was very useful to identify actors who were experienced enough and capable of contributing to the implementation of planned activities at different segments of the value chain.

The second criterion was concerned with the effective representation. This criterion was very useful to ensure that all key stakeholder groups in the sunflower value chain are represented, their views are heard and they are assigned appropriate roles to play in the innovation process. Fowler and Biekart (2017) differentiate MSPs based of the type of stakeholder participation in its implementation process. One of these types is

“representative MSPs” that comprises stakeholders nominated by stakeholder groups represented on governing structures.

While different NGOs and companies in the sunflower value chain were identified from the beginning of MSP formation, those who had long term operations and presence in the project areas were better positioned to be selected members of sunflower MSPs and be assigned role in the MSPs processes. As explained by KIs from RLDC, Oxfam and INADES Tanzania, the historical background and experience of various stakeholders in working with multiple disciplinary actors in community development programmes was an added advantage for stakeholders to be involved in the sunflower MSPs. For example, one key informant interviewed in Kongwa District had the following views:

“....the key aspects that enabled my organisation to be selected as a lead implementing partner in Kongwa District include among others the long term presence and operations in the area, the experience and collaboration with Oxfam Tanzania in implementing a rural development project, the existence of strong financial control systems to ensure compliance and various resources the organization had to support sunflower value chain interventions...” (KI, Kongwa District).

In practice, these findings revealed that members of sunflower MSPs in Dodoma Region were selected and assigned roles in the MSPs based on their competencies in the subsector, long term operations in the development field and technical and financial capacities to support MSPs processes. For example, INADES Formation Tanzania, CEDIT, sunflower processing companies, LGAs and individual experts who previously worked with the RLDC and Oxfam Tanzania were given more chance to lead the implementation of MSP activities.

Although various criteria were used to select potential actors and assign them specific tasks to coordinate, the selection process used may however have biases, leaving competent actors behind if appropriate strategies are not put in place to open doors for continued identification of other stakeholders during the implementation process. It implies that additional potential stakeholders can be identified through multi-stakeholder interaction processes that take place during the implementation process. This requires MSP facilitators to be flexible enough to welcome and accommodate new stakeholders who would have greater contribution to the attainment of the intended value chain development outcomes.

4.1.4 Characteristics of MSPs for sunflower value chain upgrading in Dodoma

The MSPs that were set up to upgrade sunflower value chain in Dodoma can be differentiated based on different characteristics. During the interviews with technical staff from RLDC, Oxfam Tanzania, INADES Tanzania and District Agricultural Extension Officers, respondents were requested to indicate key characteristics that were used to differentiate various MSPs for upgrading sunflower value chain in Dodoma Region. It was found that sunflower MSPs described in this study were differentiated based on the structure and composition of members, the objectives or outcomes sunflower MSPs were set to achieve along the value chain, the level of stakeholder interaction or MSP functioning to address sunflower value chain constraints.

Beisheim and Liese (2014) have also found that MSPs can be formed on the basis on three major aspects which constitute their primary objectives: (a) service delivery or implementation, (b) knowledge transfer, and (c) setting of standards. These aspects are not different from the aspects that were used to characterise sunflower MSPs in the study area. Nevertheless, these aspects cannot be generalised across all MSPs or be set as

standard elements to characterise them. While stakeholders involved in the implementation of each sunflower value chain upgrading initiative together constituted a larger independent platform to facilitate stakeholders' interaction and address sunflower constraints along the entire value chain, key informant interviews revealed that smaller and specific platforms were also formed to address specific issues and objectives of the value chain.

It was found that sunflower multi-stakeholder platforms were set up to operate at different nodes of the value chain depending on constraints they were set to address and the expected outcomes. These findings concur with what other scholars have reported about MSP establishment. For example, Nederlof *et al.* (2012) and Dentoni *et al.* (2012b) have found that food value chain MSPs often need to operate at different levels of the chains to meet the objectives they are set to reach along specific segments of the chains.

Meanwhile, the size of an MSP and levels of functioning highly depend on the scope and magnitude of the issues being addressed. For instance, smaller interventions that focus only on providing practical solutions to specific problems and do not address policy related issues can only be set up to operate at community and district level. The larger multi-stakeholder platforms were set up to ensure overall coordination of value chain activities, facilitate strategic planning, networking and implementation of value chain activities aimed at improving the performance of the entire subsector.

The coordination of activities under these platforms was led by steering committees comprising technical experts selected from the lead implementing partners and knowledgeable people representing other stakeholder groups involved in the projects. In each district under the project, sunflower value chain initiatives supported establishment

and strengthening of district forums whose main role was to foster coordination, collaboration and networking between sunflower value chain actors and other stakeholders in the agriculture sector within and outside the district. Small coordination committees comprising members selected from different stakeholders groups operating in that specific district were formed to coordinate activities at district level.

At community level, specifically at ward level, the initiatives supported formation of local platforms to create a space for interaction, networking and learning between stakeholders operating in different villages and to implement practical solutions designed to address sunflower constraints. On-farm demonstration plots were used as a medium for stakeholder interaction, learning and experience sharing among different actors including farmers, village government, district extension workers, NGOs, and input suppliers. Table 3 provides a summary description of sunflower MSPs actors, their roles and the levels of MSPs' functioning.

The issues that were discussed in the higher level platforms mainly focused on issues related strategic planning, fundraising, policies and frameworks regulating sunflower subsector, quality standards, subsector coordination and management and implementation of higher level activities. Activities which were designed to facilitate stakeholders interaction and networking at value chain levels include stakeholders meetings and workshops that were organised for learning purposes, decision making of key issues of the platforms, experience sharing and dissemination of lessons at wider scale.

Table 3: Levels of operation and functions of sunflower MSP actors

Type of MSP	Key functions of actors in the MSP processes	Stakeholders' engagement processes
Value chain coordination and management multi-stakeholder platforms	<ul style="list-style-type: none"> - Overall coordination of the sub-sector - Strategic planning and implementation of overall value chain activities - Lobby and advocacy to influence policy change - Facilitate financial and market linkages - Capacity building of platform members - Facilitate networking, learning and information exchange - Linkage with technology generation - Promoting market competitiveness by supporting value addition interventions - Advisory services - Certification and quality assurance 	<ul style="list-style-type: none"> - Stakeholders consultation forums and meetings - Coordination and management meetings
District coordination and management multi-stakeholder platforms	<ul style="list-style-type: none"> - Coordination of MSP activities at district level - Capacity building of platform members - Facilitate market access and linkages - Linkages with agro-dealers and service providers - Learning and information sharing - Value addition through sunflower processing - Supply of agro-inputs and implements - Lobby and advocacy to influence policy change 	<ul style="list-style-type: none"> - Stakeholders consultation forums and meetings - Coordination and management meetings - Exchange and learning forums
Ward and village coordination and management multi-stakeholder platforms	<ul style="list-style-type: none"> - Capacity building of platform members - Testing and validating of selected technologies and innovations aimed to address specific constraints - Dissemination of lessons and best practices through on-farm demonstration plots - Production and multiplication and distribution of improved seeds varieties - Value addition through sunflower processing - Supply of agro-inputs and implements 	<ul style="list-style-type: none"> - Stakeholders consultation forums and meetings - Coordination and management meetings - Exchange and learning forums - Capacity building and learning events (trainings and workshops)

Source: Summarised from documentary review and key informant interviews

At district level, district networks of farmer groups and association of PMCs served the purpose of bringing together district stakeholders. These structures were set up to provide an avenue for district stakeholders to interact, share experiences and for communicating advocacy issues from community level to higher level platforms or taking back practical solutions achieved through advocacy from higher level platforms to community level MSPs for implementation. Other forums that were used to bring together stakeholders in

sunflower value chain at district level were stakeholder consultation meetings and workshops. District forums were therefore set to facilitate learning, experience sharing and dissemination of lessons to value chain stakeholders operating in the particular district.

At community level, it was found that in each ward under project interventions, sunflower value chain support organisations i.e. Oxfam Tanzania and RLDC facilitated formation and strengthening of sunflower PMCs, SACCOS and community managed cereal banks responsible for storage of sunflower and other cereals. Local multi-stakeholder platforms were therefore established in each ward to bring together various stakeholders involved in the value chain activities at ward and village levels. Small coordination committees comprising representatives from sunflower producer groups, service providers, PMCs, SACCOS, community managed cereal banks and other stakeholder groups were formed to coordinate at ward and village level. To improve the quality and value addition of sunflower, sunflower value chain initiatives supported the construction of new improved storage facilities and /or rehabilitation of the existing ones in all villages under the project.

Key informant interviews with members of community based MSPs in Sejeli, Buigiri and Manchali wards revealed that in each ward, sunflower MSPs responsible for value addition through processing and quality assurance through improved storage activities were given by the projects a starting capital amounting to TSH 5 000 000 each to increase the engagement of members in the sunflower business. Additionally, sunflower initiatives also supported the formation of village community banks (VICOBA) and sunflower producer groups to manage on-farm demonstration plots.

4.1.5 Membership composition of different sunflower MSPs

The membership composition of sunflower MSPs was influenced by sunflower constraints being addressed, and the competencies and resources required to address the constraints. Interviews with technical staff from the lead implementing organisations at Oxfam and RLDC revealed that while some stakeholders played a role in only one specific platform, majority of them had multiple functions and roles to play in several platforms established at different nodes (land management, production, processing, marketing, consumption) of the chain. As a result of that, the size of sunflower MSPs varied from one MSP to another depending on the number of members that comprise it.

For instance, value chain coordination and management platforms comprised many members representing various stakeholder groups operating at all segments of sunflower value chain while community based platforms had few members compared to district and value chain coordination and management platforms. It was also found that sunflower platforms were formed at different levels of the value chain, each of them being facilitated by a small coordination committee comprising members selected from key stakeholder groups involved in it.

At community level for example, two types of MSPs were identified. One was responsible for production and the other for marketing of sunflower. These platforms were established in each administrative village under the project. The platforms were established to implement various strategies that were selected to increase sunflower production by addressing sunflower constraints, knowledge transfer, building local institutions and for marketing purposes. These platforms involved farmers' groups, Local Government Authorities (LGAs) staff, NGO lead implementers, traders, input-suppliers, and rural financial institutions (VICOBA and SACCOS).

The second type of community based platforms were set to promote postharvest handling and value addition issues through collective management of storage facilities, collateral management systems, value addition through processing and marketing of sunflower products. These platforms were operating at ward level and members include representatives of farmers' groups, processing and marketing companies, individual processors, traders, inputs suppliers, transporters, formal and rural financial institutions, LGAs staff and NGO lead implementers.

At district level, the initiatives facilitated formation of intermediary platforms which aimed to facilitate interaction of stakeholders operating at district level. The district platforms drew membership from community based platforms through representation for learning, experience sharing, networking and advocacy purposes. District level MSPs were also responsible for facilitating market and financial linkages within the districts. In terms of membership composition, district based MSPs comprised of representatives of farmers groups, PMCs, collateral management and storage committees, LGAs staff, processors, traders, formal and rural financial institutions, NGO lead implementers, seed companies, research and inputs suppliers and technology developer (SIDO).

At value chain level (regional level), each value chain initiative supported formation and functioning of one larger multi-stakeholder platform bringing together all actors in the sunflower value chain to interact, collaborate, plan together and implement joint actions that require higher level implementation. These platforms were also set up to facilitate higher level learning, experience sharing, overall coordination and management of value chain activities and lobby and advocacy. The membership of these platforms comprised of value chain support organisations (RLDC and Oxfam Tanzania), NGO lead implementers, seed companies, LGAs, research and training institutions, the Regional Agricultural

Advisor (RAA), Tanzania Small Industries Development Organization (SIDO) and formal financial institutions (CRDB bank, NBC bank, Equity bank and NMB banks). Other members were sunflower processors associations i.e. Central Zone Sunflower Processors Association (CEZOSOPA) and Tanzania Sunflower Processors Association (TASUPA); Tanzania Edible Oil Seeds Association (TEOSA), Tanzania Food and Drugs Agency (TFDA) and Tanzania Bureau of Standards (TBS).

While the exact nature of an MSP depends much on the issues being discussed and the objectives the platform is set to achieve (Dentoni *et al.*, 2012b), the findings from this study show that sunflower support organisations i.e. RLDC and Oxfam Tanzania could not establish clear boundaries for each MSP that would in turn define the size and composition of actors to engage in the MSP processes. The failure of RLDC and Oxfam to know the exact number and types of stakeholders to be involved in specific sunflower MSP had greater effects on the functioning of MSPs, achievement of the objectives the platforms were set to achieve and sustainability of value chain outcomes.

The looseness and dynamic nature of MSP structures limited the capability of sunflower value chain support organisations i.e. RLDC and Oxfam Tanzania to allocate some key functions to specific actors, design and implement the sustainability plan, effectively monitor and evaluate the programmes' implementation process and impact of resulting outcomes to the beneficiaries. As a consequence, the willingness and commitment of MSPs' members to participate and support the implementation of sunflower value chain upgrading interventions, particularly the allocation of own financial resources to support MSPs' activities could not be achieved. Despite many platforms that were established to facilitate stakeholders' interactions and collaboration to implement sunflower value chain upgrading activities, stakeholders in the sunflower value chain interventions in Dodoma

Region can be characterised based on the key functions they performed in the sunflower MSP processes. They can also be characterised based on their levels of engagement in the MSPs operations and their contribution to the objectives the two value chain initiatives were set to achieve.

Key informant interviews and documentary review were used to identify key sunflower MSPs categories based on their functions in the sunflower value chain upgrading processes. The findings from key informant interviews and review of project documents revealed four different categories of multi-stakeholder platforms which were used to facilitate interaction, networking and collaboration of sunflower actors with similar functions in the sunflower value chain upgrading process. The four categories of sunflower MSPs that were identified based on different functions the MSP members were performing along the value chain are presented in the subsections below.

4.1.5.1 Sunflower value chain coordination and management platforms

The first category of MSPs focused on the overall coordination and management of sunflower value chain activities, policy dialogue and facilitation of market and financial linkages. Key informant interviews revealed that sunflower value chain actors in this category were operating at different levels of the value chain, through different committees which were set to coordinate specific activities at different segments of the value chain. Stakeholders in this category include sunflower value chain support organisation (i.e. Oxfam Tanzania and RLDC) and project lead implementing organizations, leaders of sunflower apex associations, local government authorities, leaders of PMCs and committees responsible for storage of cereals including sunflower seeds.

It was also found that all activities related to the engagement of stakeholders in this category were financed, monitored and supervised by RLDC and Oxfam Tanzania for quality assurance. Stakeholders in this category were positioned to ensure that jointly planned activities are timely implemented, resources are available and the intended outcomes are reached.

4.1.5.2 Sunflower seeds production and distribution platforms

The second category of MSPs was concerned with the production and distribution of improved sunflower seeds, capacity building to MSP members and marketing of improved seeds to farmers. This category of MSPs comprised stakeholders who were mainly active at community and district levels, but there were sunflower actors who were operating at other segments of the value chain depending on issues at hand and resources needs to accomplish specific tasks. For instance, smallholder farmers, farmer groups and associations, input suppliers, traders, transporters; private extension service providers and local government authorities were very active in the execution of this function at community level.

Stakeholders with multiple functions along the chain who were involved in this category include research and training institutions whose function was to ensure that improved seeds are available, regulatory authorities for quality assurance, commercial banks to enhance access to financial capital for investment in the sunflower business. Other actors were public and private extension service providers, lead implementers of sunflower value chain initiatives, seed companies and farmer networks.

4.1.5.3 Sunflower oil processing and marketing platforms

The third category of MSPs was responsible for value addition and marketing of sunflower products including buying sunflower seeds from farmers, processing and oil refinery, branding and marketing of quality sunflower oil and sunflower cakes. Stakeholders in this category include individual and company processors of sunflower, traders, retailers, LGAs, transporters and cooperatives. The findings from key informant interviews with project managers at RLDC and Oxfam Tanzania revealed that the level of engagement, technical competencies and financial capacities of stakeholders in this category were key determinants of the direction and movement of sunflower products from production level to final consumers.

4.1.5.4 Access to finance and financial linkages platforms

The fourth category of MSPs involved actors who supported interventions that aimed to enhance access to financial services and financial linkages. Among those include rural based informal financial institutions such as the Savings and Credits Cooperative Societies (SACCOS) and Village Community Banks (VICOBA), formal financial institutions and commercial banks (CRDB, NBC and Equity Bank). Other stakeholders in this category were NGO facilitators such as INADES Formation Tanzania and the Social and Economic Development Initiatives for Tanzania (SEDI) and Moshi Co-operative University (MoCU). The key function of actors in this category was to ensure that producer farmers, processors and other stakeholders providing services along the value chain had sufficient financial capital to invest in sunflower business.

4.1.6 Sunflower value chain upgrading through MSPs processes

MSPs are fluid entities, networks of actors or institutional arrangements with an evolving membership that draws in relevant expertise depending on the problems being addressed

by members involved. Through this study, it was found that MSPs that were set to upgrade sunflower value chain were very complex in nature. While some actors had specific interventions to implement at only one specific segment of the value chain (e.g. production, processing, input supply, marketing, etc), most of actors had roles to play across several or all segments of the value chain depending on the issues being addressed.

For example, Oxfam Tanzania, RLDC and other NGOs leads played role at all segments of the chain starting from production throughout consumption level. The lack of clear boundaries, exact size and membership composition of sunflower MSPs in Dodoma poses a challenge to describe properly the level of engagement and contribution of individual actors in the implementation of value chain interventions that were set to address various constraints of sunflower value chain. Nevertheless, this study provides a detailed account of specific interventions that were implemented by actors to address sunflower constraints at different levels of MSP operations and segments of the sunflower value chain.

4.1.6.1 Sunflower value chain upgrading at community level

During key informant interviews and FGD sessions, participants were requested to explain how sunflower value chain activities were implemented at community level. It was found that each community based platform was required to develop a constitution to guide its functioning, for compliance and accountability of members. Despite that, these platforms were not able to accomplish the formalisation process of their constitutions. When asked about members' compliance to a constitution which is not formalised, FGD participants responded that the constitutions were developed jointly by all platform members hence every member has the obligation to comply with the contained rules.

Regardless of sunflower MSP structures and competencies of MSP members that were created to enhance stakeholders' engagement in the implementation of sunflower value chain interventions, having in place joint agreed guidelines and rules that define the roles and responsibilities of individual sunflower MSP members was imperative to ensure compliance and proper functioning of MSPs. The value chain interventions at community level focused on production and marketing of sunflower seeds through adoption and dissemination of selected good agronomic practices, use of improved seed varieties and agro-inputs, pre- and post-harvest loss management and other upgrading strategies.

As expressed by participants into FGDs in Banyibanyi village, smallholder farmers played a vital role in the identification of sunflower constraints and opportunities, prioritisation and finally implementation of promising strategies. For example, the experience of farmers on the agro-ecological conditions was a valuable input in the identification of sunflower pests and diseases common in the project areas, rainfall patterns and sunflower seeds varieties needed by farmers. In each village, one demonstration plot was established to test and validate selected promising innovations and technologies and to disseminate best practices and value chain outcomes to other farmers. In each ward, sunflower value chain initiative supported formation of community managed processors and marketing cooperative (PMC) to improve value addition and marketing of sunflower.

The interviews with PMC leaders in Kongwa and Chamwino districts revealed that the agricultural marketing cooperative societies were provided with sunflower processing equipments for value addition; income generation to farmers and to ensure availability of cooking oil in the communities and seed cake for animal feeds at affordable prices. In addition to processing equipments, PMCs and platforms responsible for the coordination

of post-harvest handling activities in each ward were provided with an initial investment capital amounting to TSH 5 000 000 to stimulate engagement of platform members in the sunflower business.

During FGDs in Kongwa District, it was found that in general many farmers have increased their investments in sunflower production as an impact of their engagement in the sunflower value chain upgrading activities. A lady from Msunjilile village confidently said that better outcomes achieved by platform members through their engagement in the MSP processes have stimulated her family to invest more in sunflower production. The lady had the following views:

“...after realising that I can cut down the costs of buying cooking oil and use income from sunflower to get other home basic needs, my husband and I decided to direct more efforts and resources in the production of sunflower. We used our shares from VICOBA savings to buy improved seeds and other inputs to increase production...” (KI, Msunjilile village).

These findings show the extent to which farmers in Msunjilile village appreciate the sunflower interventions in terms of social and economic contributions to the living conditions of farmers. A result of increased engagement and participation in the MSPs processes, smallholder farmers are now actively engaged in production and marketing of sunflower to earn more income. Capacity building interventions on GAPs and value addition have stimulated their creativity and innovative capacity to look at sunflower as a new business opportunity to generate more income for investment in more remunerative activities.

The promotion of rural financial services was found to be more advantageous for farmers to get additional capital for investment in sunflower production and marketing. As explained by participants in the FGDs in Banyibanyi, Manchale and Chinangali villages, sunflower value chain upgrading initiatives also supported interventions that aimed to improve access to financial services. It was found that through sunflower value chain initiatives, RLDC and Oxfam supported formation and strengthening of rural financial institutions (SACCOS and VICOBA) through which farmers could acquire loans for investment in sunflower production and other businesses. Additionally, the two organisations also supported construction and rehabilitation of storage facilities in each village to improve postharvest handling and quality improvement.

The presence of improved storage facilities contributed to increased availability and access to sunflower seeds, improved quality and improved access to markets with relatively higher price for farmers who could store and sell sunflower later when the prices rose. The inclusion of activities aiming at improving access to financial services and quality management services to platforms' members in the value chain interventions could be one of the reasons why sunflower is currently grown almost by every household in the study areas and increase in the number of processing plants installed in almost all villages.

In practical terms, MSPs operations at community level focused on strengthening the capacities of producer farmers and their associations to test and validate various technologies and innovation that were introduced to address sunflower value chain constraints. Other functions of sunflower MSPs at community level include production and multiplication of improved seeds, promotion of contract farming, sunflower processing through PMCs and dissemination of lessons and best practices to stimulate the

attention of more actors to engage in the sunflower business. Through these interventions, it was found that farmers in the MSP processes were able to increase sunflower production, household income and improved access and availability of sunflower cooking oil in all villages under the project.

4.1.6.2 Sunflower value chain upgrading at district level

At district level, the implementation of sunflower MSPs activities was led by technical staff from NGOs-lead implementers of sunflower value chain interventions, district extension officers and selected leaders of sunflower processors' organisations. District level MSPs served as intermediate structures to link members of community based platforms to members of the larger platforms at project level.

Key informant interviews held with leaders of sunflower MSPs revealed that to some extent, district level MSPs operations also supported the identification of sunflower value chain constraints, selection of upgrading strategies and implementation of proposed practical solutions to address sunflower constraints. The key function of district MSP members was to strengthen networking and communication between higher level and community based actors while facilitating information flow from higher level to grassroots and from the grassroots to higher level for action.

Specifically, the key functions of district level MSPs included capacity building interventions, facilitating market access and linkages, linkages with service providers as well as facilitating learning and information sharing across the various level of the value chain. These platforms also played an important role in channelling lobbying and advocacy issues identified at community level to higher level platforms for advocacy. One district-level Agricultural Marketing and Cooperative Society (AMCOS) commonly

known by its Swahili name “*Chama Kikuu cha Usindikaji wa Mafuta ya Alizeti (CHAKIUMA)*” was formed to bring together members of the five PMCs for networking, collaboration, learning and advocacy. CHAKIUMA draws its membership and leadership from the five PMCs. Specifically, CHAKIUMA was established to promote sunflower business in the two districts, facilitate market linkages and to advocate for the interests of sunflower actors within and beyond the boundaries of Chamwino and Kongwa Districts.

For advocacy purposes, the association was linked to higher level sunflower processors apex associations for synergy on issues that required regional and national level advocacy interventions. As illustrated by the cases on the oil palm platform in Ghana, the conservation agriculture platform in Zambia, the poultry network in Tanzania and the vegetable platform in Malawi, Nederlof *et al.* (2011) have reported that the evidence and experiences generated at the local level MSPs can be brought up to the national level MSPs, and provide important material for lobbying and policy advocacy.

4.1.6.3 Sunflower value chain upgrading at regional and project level

As presented in the previous sections, sunflower MSPs in Dodoma operated at different levels of the value chain to achieve the development outcomes sunflower value chain initiatives were set to reach. At project level, the overall implementation and coordination of sunflower value chain upgrading interventions was led by sunflower value chain support organisations i.e. RLDC and Oxfam Tanzania through established technical committees comprising experts selected from lead implementing partner organisations.

Key informant interviews with project staff at RLDC and Oxfam Tanzania revealed that sunflower MSP interventions at value chain level mainly targeted issues related to the overall coordination of value chain activities, strategic planning and implementation of

selected strategies aimed to improve the performance of the subsector. Other activities that were implemented at value chain level include capacity building of lead implementer to improve service delivery, resources mobilization and policy dialogue to create conducive policy and business environment for sunflower subsector.

It was also found that higher level advocacy interventions were led by the apex associations of sunflower processors i.e. CEZOSOPA and TASUPA whose main function was to collect evidence on issues hindering the growth of the subsector. Guided by identified policy related issues, the apex association would organise advocacy events aiming to inform policy makers about identified issues and appropriate actions needed to address them. Other advocacy issues that were advocated by actors operating at value chain level include market related issues, climate change, taxes and levies, weights and measures, poor infrastructures, limited access to quality inputs, inadequate extension services and lack of access to financial capital, to mention few.

Despite the existence of three levels of sunflower MSP operations, some platform members had multiple functions and role to play in MSP process along the chain. Additionally, some of the interventions were implemented at different levels of the value chain to address specific constraints at different nodes of the value chain. Regardless of whether MSPs are established at local or higher levels of particular food value chains, some authors argue that different MSPs can still explore technological, organisational and institutional solutions, making them ideal for addressing value chain related problems in an integrated manner (Flor *et al.*, 2016; Sanyang *et al.*, 2014; Schut *et al.*, 2016).

To ensure the dissemination and scaling up sunflower value chain outcomes, sunflower MSPs facilitators developed a communication strategy to foster continuous flow of

information, experience sharing and learning along and across the three levels of MSPs operations. Despite the presence of district level MSP to link community level actors to higher level value chain actors and presence of a communication strategy to enhance information flow and knowledge dissemination, the under-representation farmers in the governance structure of value chain level MSPs limited exchange between community level and value chain level SMP members. The under-representation of farmers in the higher level decision making MSP bodies obviously has negative implication on the planning and integration of farmers' views and agenda in the overall value chain plans.

As a consequence, some important constraints faced by farmers may not be heard or addressed, limiting the design, implementation and adoption process of technologies and innovations required to address them. Some studies also suggest that MSPs that are implemented in linear model may reinforce the top-down transfer of knowledge paradigm, rather than fostering systems approaches where innovation emerges from interactions between different types of stakeholders across different levels of the chain (Schut *et al.*, 2015).

4.1.7 Facilitation, coordination and management of sunflower MSPs

Although the findings show that sunflower value chain upgrading initiatives were not able to define clearly the boundaries, size and exact membership composition of sunflower MSPs, there is need to understand how sunflower MSPs in Dodoma Region were facilitated, coordinated and managed. Generally, the process of establishing MSP for value chain upgrading is context specific and varies depending on the objectives the value chain is established to achieve. This implies that the way sunflower MSPs were facilitated, coordinated and managed has a greater influence on their performance and achievement of specific value chain objectives. During key informant interviews and

FGDs, respondents were asked to explain how sunflower MSPs were facilitated, coordinated and managed to implement value chain upgrading strategies and innovations that were designed to address various sunflower constraints.

Key informant interviews with managers, coordinators and technical staff at RLDC, Oxfam Tanzania, INADES and leaders of sunflower processor associations all showed that sunflower value chain interventions were coordinated through small coordination committees that were established at different levels of the value chain depending on specific functions and expected value chain outcomes they were set to reach. These committees comprised technical experts and knowledgeable people representing different stakeholder groups and organisations in the sunflower value chain upgrading process.

At value chain level, the findings from interviews with leaders of CEZOSOPA and TASUPA, coordination committees and managers of the two value chain initiatives at RLDC and Oxfam Tanzania showed that the main role of the coordination committees was to oversee the overall implementation of sunflower value chain activities, coordinate operations of the larger sunflower MSPs, and facilitate communication, learning and dialogue among actors in the sunflower value chain. It was also found that MSP coordination committees at value chain level were also responsible for building the capacity of platform members, facilitating linkages and networking between actors operating at different levels of the value chain and to provide technical and financial support needed to enhance the implementation of value chain activities.

Interviews conducted with the agricultural extension officers, cooperative officers and NGO staff who led the implementation of sunflower value chain upgrading interventions in Kongwa and Chamwino districts revealed that MSP coordination committees at

community levels were responsible for the implementation of practical solutions designed to address specific constraints of sunflower. Despite that, the findings show that community based coordination committees were working in close collaboration with district level MSP coordination committees to ensure continued feedback and dissemination of value chain outcomes across all members of the platforms in each district.

To some extent, it was found that sunflower coordination committees acted as governance bodies for decision making on the issues of the platforms, accountability and for carrying forward some activities for lobbying and advocacy from lower level to higher level and vis-versa. At different occasions, participants in the FGDs in Chalinze, Chinangali and Sejeli villages reported that MSP coordination committees were very influential and supportive in addressing some conflicts of interest that emerged among platform members due to the mismanagement of incomes earned by PMCs through processing and marketing of sunflower oil.

For example, one of the leaders of sunflower PMC in Sejeli village said that:

“...despite the conflicts of interests that emerged among members of PMCs and sunflower producer groups, leaders of the platforms were competent enough to keep harmony and solidarity among members. Their strengths in managing internal conflicts enabled farmer groups and PMCs to remain operational while keeping the platform members committed to their primary objectives...” (KI, Sejeli village).

These findings demonstrate that the establishment of sunflower MSP coordination committees was a very important aspect to foster the implementation of planned value

chain activities, build trust among actors and improve collaboration among platform members. Through this study, it was found that sunflower coordination committees responsible for value addition, marketing, postharvest handling through joint management of crop storage facilities, and those responsible for the management of sunflower processors associations were still operating although the frequency of internal meetings had declined.

Contrary to that, the committees which were formed to assume the overall coordination of sunflower value chain initiatives and those responsible for the management of seed production and distribution were no longer functional. This implies that members of these committees were not strategic and committed enough to integrate value chain outcomes into their individual and organizational plans to ensure the continuity and sustainability of successful sunflower value chain outcomes.

The literature has also shown that the performance of MSPs and value chain partnerships are in most cases influenced by leadership and technical capacity of MSPs facilitators to address and mitigate institutional barriers to upgrading strategies (Drost *et al.*, 2012); and strong facilitation and coordination of the partnership activities (Cadilhon, 2013). Some authors have also found that MSPs were very useful in solving the conflicts between millers who were in dispute because of serious environmental pollution caused by the use of spent tires as fuel in Ghana (Nederlof *et al.*, 2011).

The implication of these findings is that sunflower value chain interventions were not strategic enough to address issues related to the sustainability of value chain outcomes. The initiatives lacked interventions to support institutionalisation of sunflower value chain outcomes into the plans of permanent structures and organisations such as LGAs and NGOs operating in the area that would continue to support MSP processes through

individual plans after the interventions have phased out. In terms of functioning, it was revealed that the way MSP coordination committees were implementing their plans was not consistent across the platforms. Leaders of PMCs who participated in the FGDs in Chalinze and Chinangali villages pointed out that the implementation of sunflower value chain upgrading activities did not follow the activity calendar which was jointly developed by MSP members.

The failure to follow the timeframe and schedule proposed by platforms' members was an indication of poor planning and management capacities of the MSP coordination committees in those villages. Additionally, time pressure for each partner to accomplish the tasks assigned to him or her, personal and organisational interests and priorities, and the lack of sufficient resources to support some value chain activities were mentioned by FGD participants to have negatively affected the functioning of sunflower MSPs' coordination committees.

4.1.8 Formalising partnerships for better MSP functioning and sustainability

The context under which an MSP is established has a crucial role to play on its functioning and sustainability. Both internal and external factors that may hinder or enhance the performance of an MSP need to be well understood when it is established. The findings from key informant interviews with project managers at RLDC and Oxfam revealed that MSP members who were assigned specific tasks to accomplish in the value chain signed contracts agreements with MSP initiators to guide their engagement in the implementation of various activities.

One of the project managers said that the contract agreements that were signed by the lead implementing NGOs were designed to ensure compliance, and to serve as binding

documents to guide their engagement and participation in the implementation of value chain activities. For other stakeholders, however, their engagements did not require any formal arrangement or contract agreement for them to engage in the MSPs processes. They were free to join and exit from the platforms at any time. At one point, one can say that formalisation of food value chain partnerships may have greater contribution to the implementation of value chain activities leading to the achievement of expected outcomes. This is because MSP members are assessed against a set of outputs described in the contract agreements, hence will be obliged to ensure that all milestones are achieved on time.

On the other side, signing contract agreements may limit the flexibility, willingness and motivation of MSP members to address institutional issues and constraints that are not described in the contract agreements. Building on the above two cases, the formalisation of value chain partnerships in the MSP processes is highly influenced by specific functions assigned to each specific actor to accomplish in the innovation process. Formalisation of value chain partnerships enables MSP members to comply with specific value chain requirements and to ensure that the objectives the MSP are accomplished in time and as planned.

Similar findings have been reported by other scholars. Russo and Tencati (2009) and Nederlof *et al.* (2011) have found that multi-stakeholder' engagement processes involve both formal and informal ways of collaboration and that they can have multiple forms and sizes. Russo and Tencati (2009) described MSPs as stakeholders' engagement structures that may come in various forms and sizes, including both formal and informal ways of collaboration. Nederlof *et al.* (2011) reported that MSPs can also be a kind of hybrid forms of transaction coordination consisting of formal and informal elements.

Schut *et al.* (2018) argue that the effective size of an MSP generally depends on specific constraints or opportunities available at hand to address them. Woome *et al.* (2016) argue that MSPs that aim to create economies of scale may be much larger in size than MSPs that aim to learn from farm-level experimentations or regulatory changes. The study found the size of MSPs at community level had few members compared to MSPs at regional and value chain levels.

At value chain level, RLDC supported the formalisation of CEZOSOPA and TASUPA to enable them to undertake lobby and advocacy activities of the behalf of other value chain actors. However, the two apex associations of processors' needed to acquire legitimacy status in order to operate as legal entities dully certified to undertake lobbying and advocacy interventions. At community and district levels, the formalisation of processors' associations could not be complete due to delayed start of the process and phasing out of the value chain initiatives. despite that, it was found that the failure of lower level MSPs to acquire legal status did not affect stakeholders' participation in the MSP processes because of the trust members of the platforms have of each other, coupled with potential benefits MSP members were expecting to get from their engagement.

Schut *et al.* (2017) have found that MSPs can start as informal networks and some may transit into more formalised structures, such as public-private partnerships or cooperatives, with the goal of becoming self-sustaining entities. Through key informant interviews, it was found that stakeholders' engagement in the implementation of lower level MSP activities was highly guided by the constitutions that clearly indicated a set of ground rules to guide its functioning and the role and obligations of every member. Despite that, the continuity and sustainability of value chain outcomes was not assured across all MSP members. The study revealed that RLDC and Oxfam Tanzania did not

plan for or develop a sustainability plan that could help sunflower value chain actors to sustain attained value chain outcomes and MSPs that were established for that purposes.

With regards to the sustainability, one extension staff in Kongwa District had the following comment:

“...many projects like this one have invested a lot of resources to formalise local committees established to coordinate some planned activities. The problem is that when the projects phase out, the committees also automatically die or cease to perform their functions. Those which remain functional are only those which have developed internal capacities to generate more resources to keep members tied together after the projects have phased out...” (KI, Kongwa district council).

Key informant interviews revealed that the sustainability of sunflower MSP coordination committees was not only determined by their legal status. Rather, the continued engagement of MSP members in the sunflower value chain interventions and sustainability of value chain outcomes were found to be associated with incentives and benefits that members accrued from their participation in the MSP activities. Some authors have also found that in an MSP process, the membership and size may change over time whereas some members can join or be invited to address specific challenges, while other partners may lose the interest to continue with the platform or leave the platform if their needs have been met (Lamers *et al.*, 2017).

In Dodoma Region, both formal and informal elements were present in the coordination and management of MSPs for sunflower value chain upgrading. While some actors in the food value chain upgrading process encourage formalisation of MSPs, some authors do not believe that formalization of an MSP can contribute to its better functioning. Nederlof

et al. (2012) argue that sometimes formalising an MSP can hinder its functioning and limit stakeholders' engagements, following the instituted bureaucratic and hierarchical procedures that may exclude some actors.

4.2 Effects of Stakeholders' Engagement Processes on the Performance of MSPs for Sunflower Value Chain Upgrading

The level of achievement of desired outcomes of a particular food value chain highly depends on the technical and financial capacities of individual stakeholders and organizations involved in the implementation of strategies aimed to upgrade it. The results discussed under this section meet the specific objective number two of this study which was concerned with the effects of stakeholders' engagement processes on the performance of sunflower MSPs in Dodoma Region.

The performance of MSPs for sunflower value chains can be measured in the framework of the overall outcomes sunflower value chain initiatives were set to achieve, changes in development outcomes individual platform members aimed to achieve through engagement in the MSPs processes or both. It can also be measured in terms of changes in the living conditions recorded by the target beneficiaries as a result from their engagement in the MSP processes. The findings presented in section highlight the changes in development outcomes that sunflower value chain initiatives were set to achieve in Dodoma Region.

However, before discussing the effects of multi-stakeholder' engagement process on the performance of sunflower MSPs in terms of changes in the value chain outcomes, it is very crucial to provide a detailed account of key aspects associated with sunflower MSP performance. These include the constraints that sunflower initiatives were set to address

through multi-stakeholder collaborations and the approaches that were used by value chain actors to implement the strategies that were designed to address sunflower constraints. As MSPs are context specific, variables related to changes in value chain outcomes at household level were compared between the districts to assess whether there were significant differences in terms of functioning and performance between sunflower MSPs in Chamwino and Kongwa Districts.

4.2.1 Constraints affecting sunflower sector performance in Tanzania

The constraints limiting the performance of sunflower value chain performance in Tanzania were identified through documentary reviews, key informant interviews, FGDs and through stakeholder consultation meetings that were organised by the Ministry of Industries and Trade to develop a ten year National Sunflower Development Strategy. Through documentary review, stakeholder consultation workshops, key informant interviews and FGDS, various constraints that have limited the performance of sunflower subsector in Tanzania were identified.

According to the Tanzania National Sunflower Development Strategy 2016 – 2020, constraints hindering the performance of sunflower subsector in Tanzania fall under three major categories of constraints (URT, 2016a). A summary of these constraints is presented in Box 1. The first category comprises constraints related to the supply of inputs and services; the second comprises constraints related to sunflower business environment, policies and subsector coordination; while the third category comprises constraints that are related to market systems development and quality assurance. The constraints falling under these three categories were also mentioned by respondents to household survey, key informant interviews and participants into FGDs conducted in Dodoma Region.

Box 1: A summary of key sunflower value chain performance constraints

- 1. Constraints related to agro-input and services supply**
 - Limited access and availability of high-quality certified sunflower seeds
 - Limited access of agricultural inputs, including fertilizers and pesticides
 - Weak institutional capacities of farmers' associations to sustainably increase sunflower production
 - Low adoption of good agronomic practices
 - Limited access to finance and use of insurance across the value chain
 - Limited storage capacity of farmers and application of premiums and discounts to motivate farmers for quality improvement
- 2. Constraints related to policy and sunflower business environment**
 - Poor coordination of sunflower sector
 - Lack of trust and transparency between producers and processors
 - Prevailing complex and discriminatory application of taxes
 - Low capacity of key support institutions to support key functions of the sector
- 3. Constraints related to market development**
 - Lack of compliance with and adherence to internationally recognized food safety and quality standards
 - Poor promotion and branding of sunflower products including oil
 - Absence of clear targeted market development interventions
 - Lack of industry clustering interventions to promote collective production and marketing of sunflower products

Source: (URT, 2016a)

With regard to inputs supply and service delivery, it was found that the most alarming constraints include the limited availability and accessibility to high quality and improved seeds varieties, limited access to agro inputs and low or poor management capacity of producer associations to sustain increased sunflower production over time. Other constraints mentioned by respondents were limited accesses to extension services leading to limited use and low adoption of good agronomic practices, limited access to financial services for investment in sunflower production and poor quality and postharvest handling of sunflower products.

In terms of policy and business working environment, it was also found that sunflower value chain performance in Tanzania is generally affected by poor coordination of the sectors due to lack of serious support to sunflower, lack of trust and transparency between producers and processors. Interviews with leaders of PMCs and MSP coordination

committees revealed that the lack of trust among sunflower actors was accentuated by the manipulation of market prices done by traders specifically middlemen who always aimed at maximizing profits on the expenses of producers who had no power and voice for price negotiation. Other constraints found through this study were related to policy such as issues of taxation and the limited capacity of key support institutions to the sector both from public and private sector to address the totality of sunflower constraints.

In relation to market systems development, it was found that majority of stakeholders in the marketing of sunflower products do not adhere or comply with the international food safety and quality standards. For instance most of the sunflower oil is sold unrefined and in unlabelled plastic containers. Most processing individuals and companies use low quality processing machines and poor equipment with limited capacities to produce good quality oil. Working under these conditions reduces the ability of processors to compete in the local and international markets.

Through stakeholder consultations and meetings, it was found that many farmers in Tanzania do not apply proper agronomic practices to improve productivity. Even where land is not a limiting factor to farmers, crop rotation and intercropping is not properly done to allow the natural replenishment of soil nutrients. Nevertheless, it was found that so far, different organizations and associations from the private sector are providing trainings on good agronomic practices to farmers, but on a limited scale. Participants in stakeholder consultation workshops were of the view that the quality of the sunflower products in the region is highly affected by inadequate postharvest handling techniques ranging from drying, storage, processing and packaging.

Stakeholder consultations also revealed that most farmers, the majority of whom are smallholders, do not use improved quality seeds; instead they rely on their own recycled seeds or uncertified seeds produced by farmers themselves through Quality Declared Seed (QDS) system, leading to low yields and insufficient volumes of sunflower seeds produced. Another constraint which was mentioned by participants during these consultations is limited availability of necessary inputs, such as fertilizers and pesticides. Although extension services to sunflower growers are provided by extension officers from both the public sector and the private sector, it was found that the agricultural extension officers in the study area are limited in number to satisfactorily meet the expectations of all farmers who need their support.

To cope with these challenges, some few farmers' associations in the sunflower sector have managed to develop well detailed business plans to enable them access financial services, but majority of them still lack adequate management capacities to run their businesses. Moreover, smallholder sunflower growers and farmers' associations do not have necessary storage facilities to accommodate the harvested sunflower crop. They are obliged to sell their crop products immediately after harvest to ensure that the seeds do not spoil at their hands before they are processed. The lack of adequate storage facilities at village or at household level affects the ability of farmers to resist the manipulation of buyers resulting in low prices. In terms of subsector coordination, the findings from stakeholder consultations show that the sunflower subsector is poorly coordinated and lacks vertical and strategic linkages.

For example, during one stakeholder consultation workshop which was held in Arusha in September, 2015, it was found that the country has no proper inventory of key players in the sunflower subsector in Tanzania, information that would enable the country to know

who is doing what and from where to build synergy among actors. It was found that the crop cess, value added tax (VAT) and import duty are some of policy related issues that have negatively affected the performance and growth of sunflower subsector. Additionally, the removal of the import duty on some edible oil import products such as palm oil limit the ability of locally produced sunflower oil to compete with imported palm oil in the domestic markets.

In terms of marketing, the findings from a stakeholder consultation meeting which was held in Dar es Salaam in November, 2015 revealed that most of the sunflower seeds in the country are mainly processed by small processing companies and individual processors who are using poor equipment with limited capacity to produce good quality oil. Participants to the workshop gave an example of Dodoma and Singida Regions where most of processed oil is sold unrefined along the roadside or at their crushing sites in unbranded containers. Through stakeholder contributions to the workshop discussions, it was found that most sunflower processing companies in Tanzania and in Dodoma Region in particular were not even registered to work legally. This implies that the issues of quality assurance and compliance to the international food safety and quality standards are not addressed.

The workshop participants had a feeling that the formalization of sunflower businesses would increase compliance to national and international food safety and quality standards. Additionally, poor quality of sunflower oils produced by value chain actors in Dodoma, poor branding and failure of sunflower processors to formalise their business diminish significantly the competitiveness of sunflower oil in the local markets. All these challenges have negative implications on the benefits and incentives of individual actors, leading into reduced engagement of the platform members in the MSP processes and

investment in sunflower business. Through this study, it was found that sunflower constraints that required practical solutions such as those related to agro-inputs and services supply were successfully addressed by MSP actors compared to constraints related to market systems development and policy environment for sunflower business.

4.2.2 Constraints affecting sunflower sector performance in Dodoma

The constraints affecting sunflower subsector performance in Dodoma Region were gathered through FGDs, key informant interviews and household survey conducted in the study sites. The findings from key informant interviews conducted with technical staff from RLDC, Oxfam, INADES and LGAs show that sunflower productivity in Dodoma is hindered by so many factors. These range from poor crop management, climate change characterised by low rains and prolonged drought, poor postharvest handling, unreliable markets, poor quality management, low processing capacity to most machines used for value addition, and limited capacity of institutions and stakeholders to support sunflower value chain interventions.

These constraints have led to low yield and income from sunflower. In Manchali village of Chamwino District, participants to FGDs were asked to mention factors that limited them to increase sunflower production. They said that the low productivity of sunflower was influenced by the changes in weather patterns due to climate changes and low rainfall. Figure 3 presents the findings about the constraints affecting sunflower value chain performance in Dodoma Region, particularly in Kongwa and Chamwino district councils. The analysis of data from household survey shows that each constraint has different implication on the productivity of sunflower and overall subsector performance.

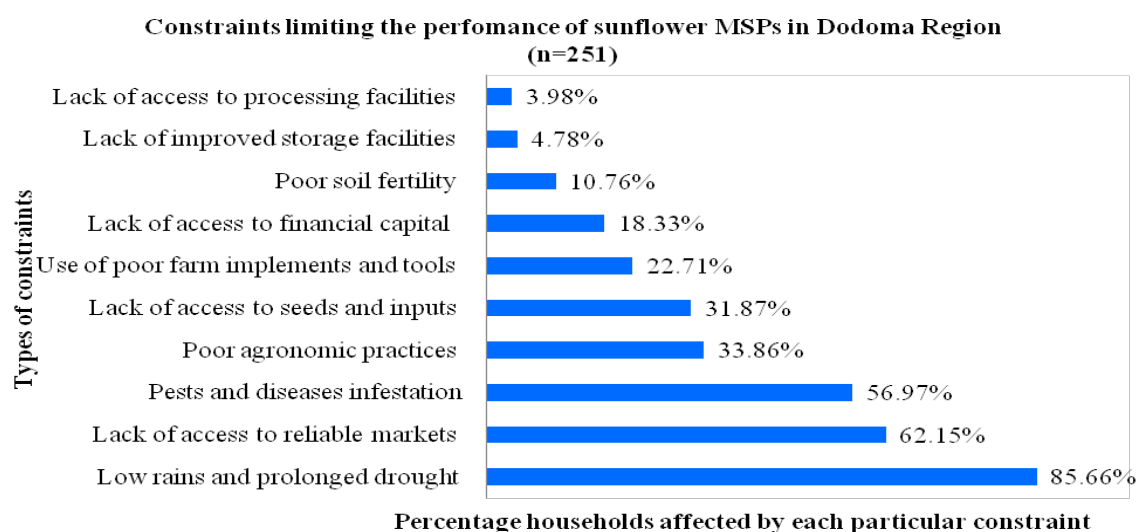


Figure 3: Constraints that limit the performance of sunflower MSPs in Dodoma

Source: Household survey

Despite a number of various stakeholders' engagement processes that were designed and implemented to address existing sunflower constraints, the findings from household survey show that the subsector is still faced by so many challenges that limit its performance. The most critical constraints mentioned by the majority of the respondents to have remained persistent with observable negative effects on the sunflower MSP performance include low rains and prolonged drought (85.7%), lack of access to reliable markets (62.2%) and prevalence of pests and diseases (57.0%). These factors are beyond the control and capacity of sunflower producers and their impact have serious impact on the production and productivity of sunflower crop.

Other constraints relate to poor agronomic practices applied by farmers coupled with limited access to extension services (33.9%), lack of access to improved seed varieties and agro-inputs (31.9%), use of poor processing machines (22.7%) and lack of access to financial capital for investment in the sunflower business (18.3%). For example, participants to FGDs in Mkutani village of Kongwa were of the view that the prolonged

drought conditions, low soil fertility, lack of access to improved seeds, limited access to extension services, poor agronomic practices and prevalence of pests and diseases were key constraints that have deprived them from getting higher yields and better returns from sunflower production. They added that for those who can produce better yields, unavailability of reliable markets and lower price of sunflower seed offered by middlemen and rural traders were big challenges.

Due to lack of reliable storage facilities, it was found sunflower seeds harvested are sold to local traders immediately after harvest at the farms, at home or at local market places in the villages. On some occasions, it was found that seeds are sold to agents operating on behalf of processors from urban areas or directly to individual or company processors operating in the villages or from urban areas. In all study villages, it was found that the majority of farmers were selling sunflower seeds at farm gate and lower price, and they had no power to influence the market price. The existence of intermediaries limits the ability of farmers to know the price offered by urban traders or processors while the latter will not get information on the price offered by middlemen to farmers.

Other constraints identified during the study include poor infrastructures such as feeder roads, communication networks and electricity. The lack of these facilities has limited the ability of farmers to reach good markets outside their residential areas, to get better prices or add value to sunflower produce. The Village Executive Officer in Mkutani village shared his experience on how poor rural infrastructure limited smallholder farmers' profitability from sunflower production. He said:

“...Sunflower processing machine and storage infrastructures were installed in Sejeli village instead of Mkutani or Banyibanyi villages where majority of PMC members could reach easily due to lack of electrical power and poor feeder roads

to connect the villages to the main road. Because of poor infrastructure, farmers had no choice of where these facilities should be installed...” (KI, Mkutani village)

This shows how poor or lack of supportive infrastructures can negatively affect the decision making and implementation of development programmes in rural areas. Villages with poor transport infrastructure were victims of price manipulation by middlemen depriving them the bargaining power to negotiate better prices as they had few options to go for. The lack of storage facilities and warehouses in the villages limited ability of farmers to wait for better prices instead; they were forced to sell sunflower seeds immediately after harvesting. This makes smallholder farmers vulnerable to the manipulation by buyers resulting into lower prices offered to them by traders.

To conclude, sunflower value chain in Dodoma Region was constrained by so many factors ranging from production through consumption levels. While some of the factors affecting the performance of sunflower subsector could be managed by individual platform members or collectively, the majority of these factors are complex in nature and cannot be controlled or addressed by single MSP members. Some constraints are related to service delivery and input supply; others are related to sunflower subsector coordination and policy environment while others are related to market development systems that hinder stakeholders to be competitive in the domestic and global markets.

FAO (2012) has also reported that sunflower productivity in Tanzania is hindered by poor agronomic practices, affordability of improved seed varieties, lack of access to inputs including fertilizers, manure, diseases and pest control chemicals, and adequate machinery, limited or no access to extension services, and unreliable markets and low

prices for sunflower products. In the study area, factors affecting the performance of sunflower value chain have limited the capacities and willingness of stakeholders to invest in sunflower business, leading to continued poor performance of the subsector in Dodoma Region.

The findings show that sunflower value chain interventions and the use of multi-stakeholder platforms could not address fully the constraints that have for many years limited the performance of sunflower subsectors. The constraints related to agro-inputs and service supplies were relatively well addressed by actors in the sunflower multi-stakeholder engagement processes. However, constraints such as unfavourable climatic conditions, lack of access to reliable market, poor rural infrastructures and the prevalence of pests and diseases of sunflower have remained critical to the performance of the subsector (URT, 2016b).

The findings from the documentary review, key informant interviews revealed that due to these constraints, the levels of achievement of sunflower value chain development outcomes were less than expected. This is because farmers could not record bumper harvest due to drought and sunflower pests and diseases that limited sunflower production. It was anticipated that the introduction of climate change adaptation and mitigation measures and strong and strategic linkages of farmers to input suppliers would have enabled farmers to deal these challenges.

4.2.3 Approaches used to facilitate stakeholders' engagements

Another important aspect to be discussed before looking on the effects of stakeholders' engagement processes on the performance of sunflower MSPs are the approaches and intervention strategies that were used by MSP actors to address sunflower value chain

constraints in Dodoma Region. Key informant interviews, FGDs and documentary review were the main methods used to generate information about the approaches and intervention strategies that were designed for sunflower value chain upgrading. The RLDC Sunflower Development Strategy (RLDC, 2008) and the Oxfam Tanzania project document (Oxfam, 2012) describe various intervention areas that guided sunflower actors in the design of key activities required to address the constraints of sunflower subsector in Dodoma Region.

The documentary review revealed a total of five main intervention strategies that were used to address sunflower value chain constraints. The five interventions strategies were designed based on the constraints that were identified through value chain analysis studies and stakeholders' consultation meetings. Specific activities to address identified constraints were proposed by value chain actors through organised stakeholder consultation workshops for planning.

The first intervention strategy was concerned with increasing production, multiplication and marketing of improved sunflower seeds. The aim of this intervention was to improve accessibility and availability of improved seeds to more farmers in the area, as a means to boost sunflower productivity and quality of sunflower seeds and its derivatives. The second intervention strategy focused on improving production and marketing of sunflower seeds for crushing and oil extraction.

Through this intervention, the initiatives aimed to improve availability and access to sunflower seeds for crushing that in turn would increase the quantities of sunflower oil available for sales in the local and export markets. Through key informant interviews carried out with processors in Dodoma town, it was found that at least 19 individual

processors and companies were supported by RLDC and Oxfam Tanzania to engage in contract farming. The focus of this intervention strategy was to improve availability of sunflower seeds for their factories, to secure market access for producers and improving sunflower quality and yields through access to quality seeds, improved agricultural practices and extension services.

The third intervention strategy focused on improving sunflower oil quality and market promotion so that processors could become more competitive and penetrate local and export markets. Through this intervention, processors were linked to processors and industries manufacturing sunflower processing equipments in China, India, South Africa and other countries for learning purposes and for access to modern processing equipments and oil purifiers. The fourth intervention strategy was concerned with access to financial services and financial linkages.

To implement the fourth strategy, RLDC in collaboration with CRDB Bank introduced an innovative loan scheme that would help sunflower processors and traders to get loans through “Collateral Management System”. One processor consulted through key informant interviews in Chinangali village of Chamwino District, explained that the functioning of collateral management system was done through grouping processors into collateral management groups whereby processors would use their stocks of sunflower seeds as collateral to guarantee them access to loans from CRDB bank.

The fifth intervention strategy focused on the promotion, adoption and dissemination of successful upgrading technologies and innovations which were introduced to upgrade sunflower value chain. As sunflower initiatives were set to benefit more farmers in various regions in the semi-arid zone of Tanzania, one of the strategies to achieve it was

to ensure that best practices and lessons are disseminated to more farmers as much as possible. It was found that the engagement processes under this strategy were designed to enhance participation of actors in the MSP activities, facilitate interactions and learning, create synergy among stakeholders and enable them to pool together the resources needed for implementation of sunflower value chain activities. Various education materials and radio program were used for the dissemination of the outcomes from sunflower value chain upgrading process.

To achieve the growth of sunflower subsector and increased smallholder households income and access to food which was the ultimate goals of sunflower value chain initiatives, a combination of various strategies was applied. This implies that food value chain upgrading processes requires a combination of different skills, knowledge and resources to address the constraints at different segments of the value chain. Some studies have found that value chain approach is used mainly to guide high-impact and sustainable initiatives focusing on improving productivity, competitiveness, entrepreneurship and growth of small and medium scale enterprises (Kilelu *et al.*, 2017). Other studies have reported that value chain interventions generally include activities that are directed at all segments of the value chain to achieve particular economic or social objectives (Maestre *et al.*, 2017).

The findings from FGDs reveal that stakeholder engagement processes were facilitated through a series of organised training workshops, seminars, coordination and management meetings and other stakeholder consultation forums. These activities were organized at different levels of the value chain, but targeting specific categories of actors, competencies needed and constraints being addressed by MSP actors. Figure 4 presents the findings on key activities that were used to stimulate participation and involvement of

smallholder producers in the sunflower MSPs process in the study area. The findings from the household survey show that activities that were mostly used to facilitate interaction between farmers and other stakeholders in the value chain were periodic stakeholders' meetings (86.8%), farmer field schools (21.5%), seminars and workshops (17.9%) and capacity building workshops (11.2%).

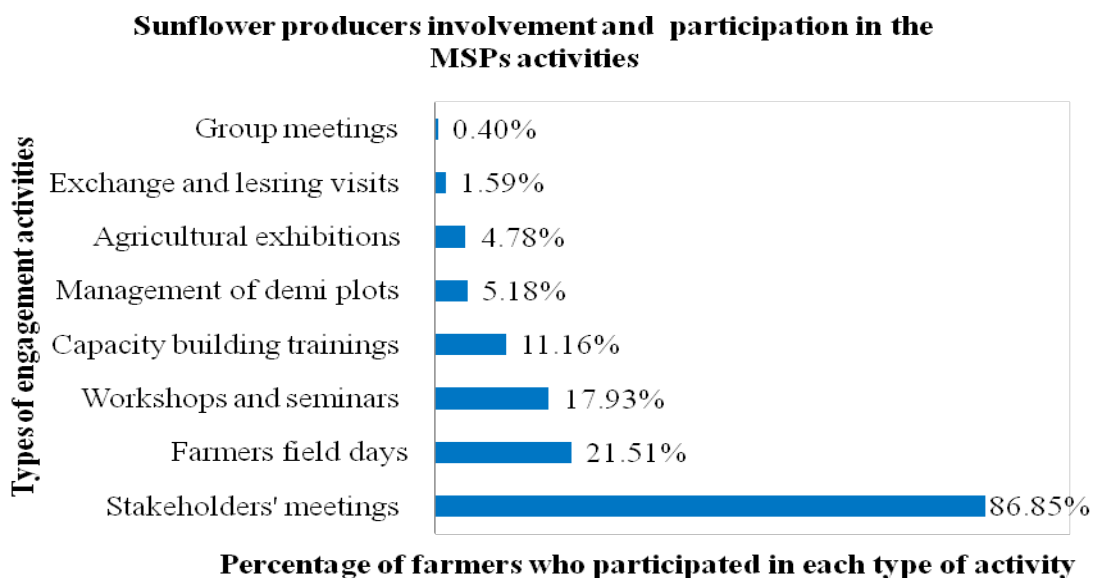


Figure 4: Farmers' involvement and participation in sunflower MSPs activities

Source: Household survey

To ensure that stakeholders' engagement processes are taking place in appropriate ways and planned manner, RLDC and Oxfam Tanzania provided all necessary requirements in terms of physical resources, technical expertise and financial resources to support the implementation of planned activities. The above findings show that the most common stakeholder engagement activity which was used to bring sunflower value chain actors together in the innovation process to address sunflower value chain constraints was stakeholder consultation meetings.

4.2.4 Outcomes of sunflower value chain attributable to MSPs performance

The understanding of sunflower constraints and strategies that were used to address them brings us to another level of discussion to know to what extent sunflower MSPs have achieved the development outcomes they were set to reach along sunflower value chain. The performance of sunflower MSPs was measured by the level of achievement of sunflower value chain outcomes that sunflower value chain initiatives were set to reach.

This section therefore presents the findings that highlight the outcomes that were reached by sunflower MSPs actors and challenges that faced them during MSPs' engagement processes. Household survey, FGDs and key informant interviews were the main sources of data regarding sunflower value chain outcomes by various MSPs. The findings under this section are discussed and presented in accordance with eight results areas falling under the five intervention strategies that were used to upgrade sunflower value chain in the study area.

4.2.4.1 Improved production and multiplication of high quality sunflower seeds

The data on production and multiplication of improved sunflower seeds were collected from the documentary review of progress reports of sunflower value chain initiatives accessed from RLDC and Oxfam Tanzania offices. The documentary review shows that in 2012, farmer groups and seed companies supported by the two sunflower value chain upgrading initiatives produced about 184.2 tons of improved seeds which were distributed to more than 18 420 sunflower farmers in the central corridor¹ of Tanzania.

It was also found that, in 2014, a total of 139.9 tons of quality seeds of sunflower were produced and sold to 17 000 smallholder farmers by the same companies and farmer

¹ RLDP (2012). The regions covered by RLDC interventions were Dodoma, Manyara and Singida

groups². These findings show that over the two seasons of stakeholders' engagement, about 324.1 tons of improved sunflower seeds were distributed to about 35 420 household out of 48 500 smallholder farmers who were targeted by sunflower value chain interventions. In terms of seed production and distribution, these findings imply that over three years of stakeholders' engagement in the MSPs processes, sunflower value chain interventions were able to reach about 73.03% of total targeted households whereby each household received about 9.15kg of improved seeds on average.

The main activities which were implemented to increase availability and marketing of improved sunflower seeds involved formation and strengthening of farmer groups specialized on production and multiplication of Quality Declared Seeds (QDS) and engagement of specialized companies in the seed industry. Other activities performed to achieve this objective include distribution of improved seeds and other inputs to farmers, capacity building, exchange and learning visits, market linkages, and setting up of demonstration farms to test various selected technologies and innovations that are appropriate to addressing existing sunflower value chain constraints.

4.2.4.2 Increased production and marketing of sunflower seeds for oil extraction

A documentary review of sunflower value chain related documents was conducted to understand key activities which were implemented by sunflower value chain actors to improve production and marketing of sunflower seeds for oil extraction in Dodoma Region. The documentary review revealed five main activities which were implemented under this intervention area. One of these activities was contract farming. Contract farming was promoted to increase production and availability of sunflower seeds which in

² Extracted from RLDC presentation made in January 2015 during stakeholders' consultation workshop which was held in Dodoma

turn would improve the availability of sunflower oil required to meet local and export market demands.

Contract farming involved producer farmers, seed producing companies and processors. A contract agreement clearly defining the role and responsibilities of the parties was signed between farmers and inputs suppliers or seeds companies. While the role of processors and seed companies was to supply farmers with improved seeds, inputs or loan for investment in sunflower production, the role of farmers was to increase production and sales of sunflower kernels to processors or companies who provided them with seeds, inputs or loans. After accomplishing the formalities related to contract farming, the next activity was to distribute improved seeds, inputs and loan to farmers for sunflower production but guided by the contract.

Over three years of engagement in the sunflower MSP processes, a total of 103 tons of improved sunflower seeds were distributed to farmers involved in contract farming to boost sunflower production. The distribution of improved seeds and other inputs was followed by capacity building interventions to ensure that farmers are applying improved and recommended agronomic practices. Up to December of 2014, it was found that about 48 101 (99.2%) farmers representing households engaged in the MSP processes were trained on best agronomic practices required for improved sunflower production.

Contract farming and capacity building interventions were designed to increase the quantities of seeds produced by farmers resulting into increased availability of sunflower oil and income for both farmers and processors. To address marketing related challenges, sunflower value chain upgrading initiatives facilitated market linkages to link producer farmers to sunflower traders and processors sunflower oil traders and consumers. By end

of 2014, the findings from documentary review show that about 18 948 producer farmers were linked to markets through mobile phone based market information system as a means to improve market access.

In order to boost production and marketing of sunflower seeds, sunflower interventions supported activities that aimed to promote sunflower pollination through beekeeping and conservation agriculture. Through these activities, it was found that about 5 000 farmers were trained on beekeeping practices while 8 768 farmers were trained on conservation agriculture as a means to mitigate the impact of climate change. Other studies have also found that the use of MSPs approach in the maize value chain upgrading have resulted into increased maize production, income and improved livelihood security of farmers (Dusengemungu *et al.*, 2014).

4.2.4.3 Increased adoption and investment in sunflower production by farmers

In order to understand the relevance of sunflower value chain upgrading interventions to smallholder farmers, it is crucial to investigate issues around adoption of the crop and expansion in farm size allocated to sunflower production as result of increased engagement and investment in the sunflower business by farmers. Key informant interviews conducted with the District Extension Officer in Kongwa District revealed that very few smallholder farmers in the district were growing sunflower for commercial purposes before the start of the two value chain initiatives.

This was because the economic and market potentials of the crop were not well known to farmers until it was revealed through the evaluation reports of development projects that were previously implemented by RLDC and Oxfam in the area. Sunflower value chain upgrading initiatives opened up therefore an opportunity for farmers to explore untapped

opportunities to raise their income. One of the strategies to increase household income from sunflower adopted by farmers was the expansion of land allocated to sunflower production to increase the quantities of sunflower produced per cropping season. Table 4 presents the findings on the changes in land size allocated to sunflower production at household.

Table 4: Average farm size allocated to sunflower production per HH (ha)

Size of land allocated to sunflower (ha)	Total household (%) (n = 251)	
	2012	2014
No land for sunflower	26.3	7.5
Less than 2 acres (0.81 ha)	43.9	26.5
From 2 to 4 acres (0.81 to 1.62 ha)	26.7	56.3
Above 4 acres (>1.62 ha)	3.1	9.7

Source: Household survey

Despite many constraints that are still limiting the performance of sunflower subsector including unfavourable weather conditions, low rainfall, prolonged drought and diseases and pests, many farmers in the study areas are currently growing sunflower as an alternative source of income. The few benefits accrued by farmers from their engagement in the sunflower business have motivated them to invest more time and resources in sunflower production, leading into increased farm size allocated to sunflower production. According to participants in FGDs in Banyibanyi and Msunjilile villages of Kongwa District, the increase in the farm size was likely influenced by the positive perceptions of farmers over the economic contributions of the crop to raise their income and increase access to sunflower cooking oil.

In the seven villages covered by the study, participants in the FGDs mentioned that before sunflower value chain interventions, they were either not growing sunflower or sunflower

was grown along the boundaries of farms to protect other crops against the wind. Small quantities of the seeds that were harvested were used only to extract oil for home consumption. Despite the prevailing adverse weather conditions in the study area, it was found that currently, every farmer has realised the economic and marketing potentials of sunflower. The chairperson of Chinangali village confirmed that income from sunflower sales and other skills farmers acquired through capacity building interventions and engagement activities in the sunflower MSP processes have enabled farmers in his village to improve their living conditions through increased cumulative household income.

Although the increase in the size of the farms allocated for sunflower production would not necessarily depict the performance of sunflower MSPs, it provides a picture about the adoption rate of the crop by household farmers that actually explains the motivation, willingness and increased investment in sunflower production. For example, one lead farmer contacted through key informant interviews in Msunjilile village indicated that she had managed to increase her income and access to basic needs as results increased expansion of land size and investment in the sunflower production. She said:

“...the increase in income from sunflower has enabled us to improve our house and pay school fees of our children. In 2013, the weather was relatively good for crop production. During that cropping season, we harvested more than 18 bags of sunflower seeds which were sold at TSH 40 000 each...” (KI, Msunjilile village).

This implies that for some farmers, the engagement in the sunflower value chain upgrading interventions has contributed to improved socio-economic conditions through increased income from sunflower sales. These families were able to access other social services such as education and improve their houses.

FGD participants in Msunjilile village were of the view that the increase in household income and access to sunflower cooking oil has increased farmers' willingness and motivation to adopt the crop as well as the accompanying technologies and innovations that were promoted through sunflower value chain development initiatives. Table 5 presents the findings on sunflower production recorded by farmers involved in MSP processes at household level. The findings from household survey show that the average annual sunflower production per household had increased from 181.7 kg in 2012 to 382.7 kg in 2014³.

Table 5: Compared household average annual sunflower production (kg)

Assessment level	Period	Mean	N	t-value	p-value
Chamwino District	2012	201.01	103	-6.459	0.000***
	2014	453.79	103		
Kongwa District	2012	168.18	148	-6.561	0.280
	2014	333.22	148		

*** Significant at $p \leq 0.001$)

Source: Household survey

The increase in sunflower production was also observed in the two districts which were covered through household survey. In Chamwino District for example, the average annual sunflower production increased from 201.01 kg in 2012 to 453.79 kg in 2014. In Kongwa District, the average annual sunflower production increased from 168.18 kg in 2012 to 333.22 kg in 2014. A paired-samples t-test statistical analysis was computed to assess the differences in sunflower production recorded by farmers in Chamwino and Kongwa Districts over three years of engagement in sunflower MSP processes. The analysis showed that the averages of annual sunflower production of 2012 and 2014 were significantly different at $p \leq 0.001$ in Chamwino District Council.

³ These average values were computed from the averages of the annual sunflower production obtained in Kongwa and Chamwino districts.

These findings imply that the more farmers and other stakeholders increased their engagements in the implementation of sunflower value chain upgrading interventions, the more they acquired more knowledge and skills to address the constraints they were facing along the chain. The increase in sunflower production was the result of increased competencies of sunflower actors to address various sunflower value chain constraints. The increase in competencies of sunflower MSPs actors to deliver better services was achieved through various stakeholders' engagement processes such as capacity building, improved linkages between farmers and service providers and technical and financial supports that were provided to MSPs members through sunflower value chain interventions.

It was also found that the production of sunflower in Chamwino District was relatively higher compared to that in Kongwa District. Participants in FGDs were of view that the weather conditions in villages of Chamwino District covered by this study were relatively favourable for sunflower production due to proximity to Mpwapwa District where chances of having good rains were higher compared to the villages covered by the project in Kongwa District. Despite the effects of prolonged drought and erratic rains experienced by farmers in the study districts, the adoption of best agronomic practices recommended for sunflower value chain upgrading by farmers enabled them to increase sunflower production over the three years of engagement.

Although the analysis of data from household survey shows significant differences in terms of means of average sunflower production between 2012 and 2014, the production of sunflower is still very low due to unfavourable weather conditions such as erratic rains and prolonged drought experienced by farmers in the study area. Changes in sunflower

production are also observed because many farmers were not growing sunflower for business purposes before sunflower interventions.

According to FAO statistics of 2015, the optimum production of sunflower in Tanzania is 3 tons of seeds per hectare which is equivalent to around 810.9 kg of seeds per acre. As majority of farmers (56.3%) in the study area were growing sunflower on the farms with average land size ranging between two and four acres, sunflower household production in the study area would have ranged between 1 621.7 kg and 3 243.2 kg in 2014. These estimates are far higher than the average means of sunflower seeds produced by farmers that were reported by respondents to household survey which is 453.8 kg of sunflower seeds in Chamwino District and 333.2 kg of sunflower seeds reported by farmers in Kongwa District.

Despite the enormous difference between the optimum production level and average sunflower production reported by farmers in the study area, participants in FGDs in Chalinze village reported that the establishment of a PMC in the village has resulted into increased income from sunflower through value addition. The increase in income from sunflower sales had stimulated smallholder farmers' engagement in sunflower production and marketing activities to earn more income. During household survey, respondents were asked to mention key achievements they have recorded as a result of their engagement in the sunflower MSP processes.

Figure 5 presents a summary of key achievements that were mentioned by respondents to household survey interviews as a result of stakeholders' engagements in the MSP processes. For instance, about 60.2% of respondents associated the increase in sunflower production to better performance of MSPs to implement the planned activities. Farmers in the study area were of the view that their participation in the MSPs activities had

improved their skills and knowledge on the use of good agronomic practices related to soil water and fertility management needed to mitigate the impact of climate change.

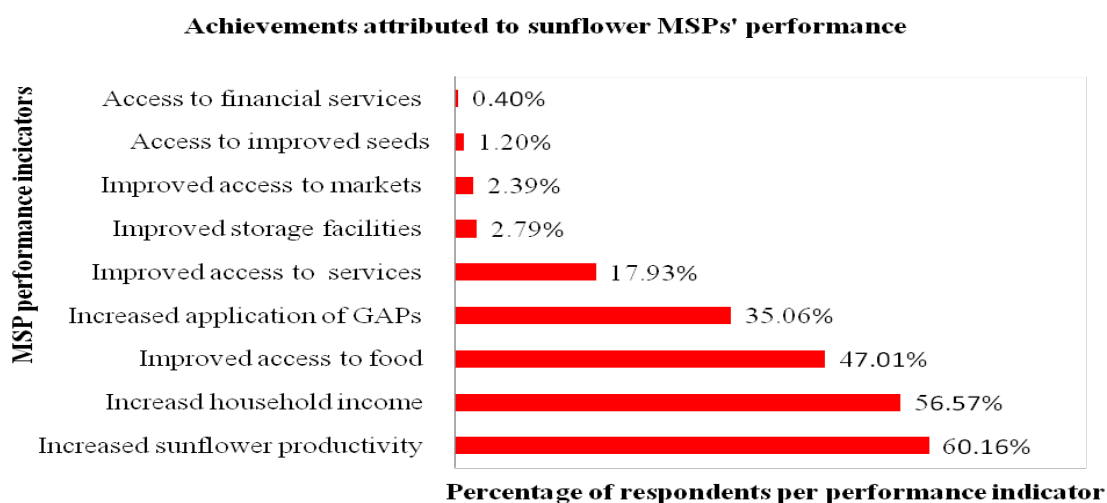


Figure 5: Achievements attributed to MSP performance (n=251)

Source: Household survey

The findings from the household survey revealed that the use of MSP approach has improved the capacities of platform members to deliver quality services to achieve the objectives of the sunflower value chain initiatives. As a result of improved performance of sunflower MSP actors, respondents to household interviews reported to have increased their household income (56.6%) and improved availability and access to food at households (47.0%). They also reported that the adoption and application of GAPs for sunflower production have increased (35.0%) and access to advisory services by farmers has also improved (17.9%).

The market potentials and socio-economic contributions of sunflower to improving the living conditions of farmers recorded through their engagement in the value chain interventions attracted the attention of farmers and other stakeholders to engage more in sunflower production and marketing. In all villages of the study, participants in FGDS

recognised their engagement in sunflower production and marketing activities as a potential business opportunity to earn them income.

4.2.4.4 Improved access to market for sunflower seeds by farmers

The data related to marketing and access to market for sunflower seeds, oil and seed cake were collected through household survey and FGDs. The findings from household survey showed that marketing of sunflower seeds had improved considerably in the study area. During FGD meetings conducted with men in Sejeli village of Kongwa District, participants said that the establishment of PMCs and collective marketing centres in the project villages, and learning and exchange visits organized to farmers by lead organizations greatly contributed to improved access to markets and better price of sunflower.

However, participants to FGDs indicated that the market for sunflower was still largely dominated by local traders or middlemen leaving no room for farmers to negotiate for better price due to lack of competition. Despite that, participants in the FGD meeting in Chinangali village said that the average price for sunflower has relatively increased from TZS 25 000 for a bag of 70 kg of sunflower seed in 2012 to TZS 50 000 per bag of 70 kg in 2014. During household survey, respondents were asked to mention the prices at which 1 kg of sunflower seeds was sold in 2012 and 2014. The findings on the changes in the average price of sunflower seeds in the districts are presented in Table 6.

A paired-samples t-test statistical analysis was also computed to compare the average prices of sunflower offered to farmers by traders in the study area between 2012 and 2014. The analysis showed that the average prices offered to farmers by traders per 1 kg of sunflower seeds in 2012 and 2014 were significantly different at $p \leq 0.000$. For

example, the average price of 1 kg of sunflower increased from TZS 446.53 in 2012 to TZS 575.54 in 2014 in Chamwino District while in Kongwa District the average price of 1 kg of sunflower increased from TZS 454.63 in 2012 to TZS 551.63.

Table 6: Compared means of average prices of 1 kg of sunflower per district (TZS)

Assessment level	Period	Mean	N	t-value	p-value
Chamwino District	2012	446.53	103	-12.393	0.000***
	2014	575.54	103		
Kongwa District	2012	454.63	148	-10.160	0.000***
	2014	551.63	148		

*** Significant at $p \leq 0.001$)

Source: Household survey

These findings imply that sunflower value chain interventions particularly stakeholders' engagement in the MSPs activities had improved market linkages, value addition and innovation capacity of actors in the value chain leading into better market price of sunflower. Additionally, it was found that the price of sunflower products offered to farmers in villages located along the highway Dodoma to Dar es Salaam were relatively higher compared to the price offered to farmers in the villages far away from the highway.

The increase in the price of sunflower was attributed to capacity building to farmers and processors on marketing and entrepreneurship, processing and improved market linkages established between farmers and other sunflower market actors. During FGDs in Mkutani village, participants indicated that the increase in market prices of sunflower products was attained through value addition interventions and through market linkages that were established between farmers and traders within and outside the study districts.

Although a large amount of sunflower seeds harvested by farmers were sold to traders at farm gate, participants in FGDs indicated that farmers in the study area have developed a culture of keeping sufficient quantities of sunflower seeds for processing to get cooking oil for own use. It was also found that selling sunflower oil instead for seeds would also increase the market value of the crop. For instance, the findings from FGDs in Mkutani and Banyibanyi villages revealed that, under normal conditions, a bag of 70 kg of sunflower seeds produce about 20 litres of oil and 40 kg of seed cake.

Participants in the two FGDs said that in the villages, one litre of sunflower oil was sold at TZS 3 000 on average while 1 kg of seed cake was sold at TZS 300. Using simple calculations, the market value of one bag of 70 kg of sunflower seeds increased from TZS 25 000 they were getting in 2012 at farm gate to TZS 72 000 in 2014 after processing. A study by Thiele *et al.* (2011) has also found that the use of MSP in the value chain upgrading in Peru was very instrumental in providing transparent information on prices and volumes and market governance, thus improving the bargaining power of producers.

During FGDs in Manchali village, participants reported that their engagement in the MSPs activities has enabled them to increase slightly sunflower production than before engagement. One leader of sunflower producer group in Manchali village had the following view:

“...I can proudly say that our engagement in the sunflower production had significantly contributed to the welfare of my family. As a result, my annual income has increased compared to the time when we were not growing it. While it was very hard to get a cumulative income of TSH 500 000 per annum before our engagement in the sunflower value chain interventions, currently, sunflower only earns us more than that average per year...” (KI, Manchali village).

The findings from household survey and key informants show that sunflower value chain upgrading process has enabled farmers to increase sunflower production and improve access to better prices compared to the situation before sunflower value chain interventions. Various factors were mentioned by respondents to have influenced these changes. It was found that the increase in sunflower production and unit prices were influenced by the increased adoption of good agronomic practices , value addition and improved market linkages between farmers and other actors in the sunflower business. The improved access to advisory and extension services and agro-inputs by farmers might have also contributed to these outcomes.

4.2.4.5 Improved sunflower oil competitiveness for market access

The data about sunflower subsector competitiveness were collected through key informants interviews and documentary review. The findings from the project documents showed that sunflower value chain initiatives supported capacity development of processors through training on quality management issues to ensure that sunflower oil they are producing has good quality and meets national and international standards. The improvement of capacities of processors was aimed at ensuring that sunflower oil produced is safe and healthy for human consumption.

For example, a processor from Kizota area in Dodoma town who responded to key informant interview said that, for him, the presence of CEZOSOPA and TASUPA contributed greatly to achieving improved linkages between various stakeholders in the sunflower value chain. He also mentioned that, as a result of several policy dialogues and advocacy interventions, value chain interventions have led to improvement in policy environment in favour of the sunflower business. He added that the government has put in

place better policies, regulations and frameworks to regulate the coordination of sunflower subsector to improve its performance.

It was also found that sunflower processors were supported by the two initiatives to acquire barcodes, quality certification, and branding and packaging materials as a means to improve their competitiveness. During key informant interviews with leaders of CEZOSOPA, it was found that some members of the association were facilitated to acquire sunflower oil purifying machines aimed at improving oil quality while CEZOSOPA was supported to acquire laboratory equipment for testing the quality of sunflower oil of her members. It was also found that most of the sunflower processed in Dodoma is consumed locally, but a small quantity of oil is traded to other regions like Dar es Salaam, Morogoro and Iringa.

The fact that sunflower oil quantities produced are still low to meet even local market demand provides another opportunity for processors and other actors in the value chain to make profitable investments in the sunflower business. Multi-stakeholder engagement processes in the sunflower value chain have improved access to services and technologies. Capacity building interventions enabled processors to improve their competencies on aspects related to marketing, brandings and quality improvement. The provision of modern processing equipment has enabled them to improve the quality of sunflower oil not only to increase their competitiveness in the markets but also to ensure that the health of consumers is protected.

4.2.4.6 Improved access to financial services and financial linkages

Participants in FGDs in Chalinze and Manchali villages of Chamwino District had feelings that the introduction of VICOBA component in sunflower value chain upgrading

initiatives had twofold benefits to them. On the one hand, VICOBA interventions have improved not only group organizational management and leadership capacity, but also had improved social networking, cooperation, togetherness and mutual help among farmers in the villages. On the other hand, these farmers said that VICOBA interventions have led to improved economic conditions of farmers in the area through cumulative savings and through access to small loans for investment in remunerative activities or to respond to other social emergencies.

For processors, the reports from RLDC showed that a total of 43 sunflower processor members of CEZOSOPA operating in Dodoma, Chamwino and Kongwa Districts were linked to Root capital, CRDB Bank and Matchmaker Associates for technical support on financial management issues and for access to loans for capital investment. As a result, RLDC in collaboration with CRDB Bank introduced a more secure and innovative loan scheme that would help sunflower processors and traders to get loans through the so called “Collateral Management System”.

As it was explained by one of the collateral managers, the functioning of this system was done through organizing and grouping sunflower processors and traders into collateral management groups through which processors would use their seed stocks as collateral to guarantee them access to loans from CRDB Bank. The bank would then provide an overdraft loan to the group of processors or individual members of the groups on instalment basis. However, any following instalment would only be released after the bank was assured by the collateral managers that the seeds stocks equivalents to the previous instalment had been received and stored in the warehouse.

The process would continue until the entire loan amount approved and given to a particular processor was exhausted and all seeds acquired were stored in the warehouse.

When all the stocks have been bought and deposited in the warehouse, then the arrangement becomes reversed. In this case, the collateral manager would release the stocks of seeds from the warehouse again in instalments to processors for oil extraction or for sell to various costumers.

During key informant interviews, processors involved in the collateral management system said that the revenue from sunflower seeds, oil and cake sales was used to pay back the loans they acquired from CRDB Bank based on the agreed terms and conditions. The collateral manager said that in order to get another seed stock for crushing or selling, the processors or traders should have deposited the money from the sales equivalent to the pay back rates agreed between them and the bank. The arrangement would last until all the seed stocks are exhausted and the entire loan recovered by the bank.

However, it was found that the collateral management system was only applied in Dodoma Municipal Council. The study also found that as a result of improved capacities on financial management aspects, some processors were able to secure loans from other commercial banks such as the National Microfinance Bank (NMB), National Bank of Commerce (NBC) and Equity Bank. The reports accessed from RLDC showed that at the end of 2014, a total of 43 individual and company processors managed to secure loans from CRDB Bank whereby a total loan amounting to TSH 6.7 billion was loaned to them by the bank.

The improved collaboration between processors and formal financial institutions has led to improved access to financial services and financial linkages in Dodoma Region. The technical support which was provided to individual and company processors through development of bankable business plans increased trust among the parties resulting into

access to loans for investment in sunflower business. As a result, individuals and company processors who got loans from CRDB Bank were able to expand their business operations to other regions and engagement in sunflower business.

4.2.4.7 Increased promotion and dissemination of successful upgrading strategies

Most MSP initiatives supported through development projects often have the ambition to have impact that goes beyond the initial target area or direct beneficiaries. The process of promoting adoption and dissemination of desired MSPs outcomes should be part of the design process of such an MSP. According to respondents to key informant interviews and FGDs, the study found that the promotion, adoption and dissemination of selected upgrading strategies and value chain outcomes were done through a range of multi-stakeholder engagement processes organized at different levels of the value chain.

As explained by key informants from RLDC and Oxfam Tanzania, MSPs' engagement processes were generally facilitated through a series of events which were organised depending on issues and the objectives the platforms aimed to achieve. Among these were training workshops, seminars, coordination and management meetings and other stakeholders' consultation events organized at different levels of the value chain. Events like quarterly, semi-annual and annual stakeholders' meetings were also used to discuss and share successes, challenges and lessons related to the implementation progress of value chain activities and for decision making on issues of the platforms.

According to the Village Executive Officers and Ward Executive Officers in the study area, capacity building interventions at community level focused on training farmers on application of good agronomic practices appropriate for sunflower production. The main topics that were covered through these trainings include land preparation, crop spacing

and raw planting, appropriate use of fertilizers and pesticides, early weeding and postharvest handling. FGDs participants in Mkutani village also mentioned that stakeholders' meetings and exchange visits were applied for the promotion and dissemination of good practices and lessons from farmer field schools and demonstration fields depending on specific challenge to address and stakeholders' categories to be involved in its implementation pathway.

An agricultural officer from Kongwa District Council had the following views regarding stakeholders' engagement processes in the implementation of the planned activities:

"...at grassroots level, training workshops, meetings and learning visits were systematically organized, but targeting specific actors, constraints and objectives of the value chain. For instance, farmers were mainly trained on the benefit and application of good agronomic practices, postharvest handling, group management and leadership skills and elementary issues about value addition and marketing..." (KI, Kongwa District Council).

It implies that, although sunflower value chain upgrading interventions involved different actors to address common challenges, different strategies were applied to achieve the end goal. MSPs operations were organized at different nodes of the value chains but, some activities targeted specific actors and constraints at that particular level of operation. For a multi-stakeholder platform to perform better, comprehensive support mechanisms are therefore needed to ensure participation of all key stakeholders in the innovation process, which include building the capacities of platforms members, creating and strengthening networks of actors and collaborations, stimulating continuous communication and assisting with financing.

An inclusive approach to support actors-led changes, innovation and entrepreneurship is imperative. Effective involvement and participation of value chain actors in the MSPs processes can therefore provide an important space for the promotion and dissemination of successful value chain upgrading strategies, innovations and lessons within and beyond the target areas and beneficiaries. However, an effective strategy to promote inclusive participation should be designed to ensure that all stakeholder groups are involved and participate in every stage and levels of MSPs operations. Wigboldus *et al.* (2016) argue that there is no basis for scaling an innovation, if the basic MSP features such as increasing the opportunity for farmers and private sector to influence research and development agenda are not respected.

4.2.4.8 Improved gender relations and gender equality at household level

During FGDs which preceded household survey, participants were requested to explain how sunflower interventions addressed issues related to power relationships and decision making process over the use of household resources. It was found that sunflower interventions also addressed gender related issues to encourage women and youth participation in the sunflower business by reducing the workload for women, and improving women and youth participation in decision making at household and sunflower association affairs.

In Chinangali village of Chamwino District for example, participants in women FGDs said that various awareness creation and capacity building trainings on gender issues were organised by INADES. They said that the aim of these trainings was to raise awareness of members of farmer groups and PMCs on the impact of unequal workload between men and women, unequal participation and engagement of women and youth in development activities and decision making process on family affairs and human rights.

The findings from FGDs revealed both positive and negative changes that are attributed to the implementation of sunflower MSPs. According participants in one of the FGDs held in Manchali village, gender related interventions have resulted into improved collaboration between household members, particularly between husbands and wives. These interventions included the involvement of both men and women in capacity building trainings on gender related issues and equitable representation of women, men and youth in the leaderships of sunflower producer groups, coordination committees, saving and lending associations, exchange visits and other development other activities.

One woman, also a member of the village council, said that in Manchali village, men and women are equally involved in productive and income generating activities at household level. The following was her statement regarding the impact of gender interventions:

“...gender related trainings have transformed our thinking and behaviour. Love and cooperation had improved in our family and the decisions on the allocation and use of family income and other resources is done together with my husband...” (KI, Manchali village).

The findings from FGDs show that sunflower value chain upgrading initiatives have also contributed to improving gender relations in the project areas. Both men and women are generally participating in development activities aimed at improving the living conditions of farmers at household level. However, it was found that there are still activities that involve women more than men. For example, activities related to the search for water, fire wood, food preparation and overall family care are implemented primarily by women. Despite that, it was found that women have increased their self-esteem and confidence to

voice out and advocate for their own benefits compared to the case before their involvement in the capacity building activities on gender issues.

As a result of increased engagement in the sunflower business and other social economic activities, it was found that women are increasingly getting more money at the end of VICOBA cycles from own savings. This implies that integration of gender related activities in the sunflower value chain interventions has improved social relations between members of beneficiary households and women involvement in the sunflower value chain activities. As a result, both men and women in the FGDs reported to have improved their participation in income generating activities aimed at improving the living conditions of their families.

With regard to gender, the study also identified some areas that require improvement to attain gender equality. Women who participated in the FGDs in Manchali village said that most women who were not directly involved in the sunflower value chain interventions are still shy and cannot express themselves freely. They added that sometimes, the existing social and cultural conditions in the communities living in the area deprive women of equal treatments and rights to land ownership. The negative effects of gender inequality were witnessed during the feedback meetings which brought together men and women from the two gender based FGDs to validate the findings from each village.

In Mkutani and Banyibanyi villages for example, it was very difficult to get concluding views from women participating the feedback meetings. According to the lists of members of community based MSPs accessed, the number of women with leadership positions in the groups and PMCs was limited. The lists showed that there were very few women in the leadership. Those who were in leadership only occupied lower and less

influential positions. Most chairpersons and secretaries of the groups and PMCs were men.

The findings in this section show that, to some extent, multi-stakeholder engagement processes implemented through sunflower value chain upgrading initiatives have improved women participation in socio-economic activities and gender relationships at household level. Capacity building programmes on gender have enabled stakeholders in the value chain to understand the benefits of involving women and youth in socio-economic activities and decision making processes. For instance, the increased participation of women and youth in the VICOBA had contributed to increased household income of farmers generated through own cumulative savings and other benefits they get from shares at the end of the saving cycle.

4.3 Changes in Household Income and Access to Food by Farmers in view of MSP performance

Another objective that was set to measure the performance of sunflower MSPs was to analyse the impact of sunflower value chain initiatives beyond the immediate value chain outcomes, specifically the impact of sunflower value chain interventions on improving the living conditions of farmers. The objective three of this study was therefore to assess the changes in household incomes and access to food by farmers in view of the performance of sunflower MSPs. These changes were measured by comparing cumulative household incomes earned by farmers from sunflower sales and incomes earned from other sources. The indicators which were used to measure changes in the availability and access to food by farmers at household level included the number meals consumed by farmers per day, months during which farmers were relatively food secure and the number of households that experienced severe food shortage per year.

During household survey interview, key informant interview and FGD sessions, respondents were requested to state all main sources of income and estimate amount of income earned from each source annually. They were also asked to mention the number of meals consumed per day, months during which they were relatively food secure and months during which they experienced severe food shortage over three years of engagement in the sunflower value chain interventions. These changes were determined through comparing data of 2012 and 2014.

A comparison between the study districts was also performed to see if sunflower MSPs have affected the living conditions of farmers in the same way across the districts. The assumption is that, if sunflower value chain upgrading MSPs in Chamwino and Kongwa districts were set up, facilitated and coordinated in the same manner, the associated interventions would likely yield the same changes in the living conditions of smallholder farmers and other value chain actors.

4.3.1 Changes in household income in view of MSPs performance

One of the indicators which were used to measure the impact of MSPs to achieving the outcomes of sunflower value chain upgrading at household level was the total household income. The total household income described in this study is a cumulative sum of revenue earned by farmers at household from sunflower sales and that from other sources per year. During household survey, respondents were asked to indicate various sources of incomes they have and the estimates of income they earned from each source for three consecutive years i.e. from 2012 to 2014.

Other sources of income apart from sunflower sales that were mentioned by respondents to household interviews that contributed to their overall income include sales from other food crops (groundnuts, sesame, sorghum and millet), sales of fruits and vegetables, income from non-farm businesses (shops and restaurants), labour force, sales of local chicken, ducks, livestock (cattle, goats, pigs) and income from fishing. Table 7 presents the findings on the annual household income from sunflower sales earned by farmers before and after engagement in the MSPs processes. The findings from household survey showed that the average annual household income earned from sunflower sales was higher in 2014 compared to the income which was earned by farmers from sunflower sales in 2012.

Table 7: Compared average annual household income from sunflower (TZS)

Assessment level	Period	Mean	N	t-value	p-value
Chamwino District	2012	61 461.16	103	-7.488	0.000***
	2014	207 868.45	103		
Kongwa District	2012	64 871.62	148	-4.951	0.002**
	2014	143 370.27	148		

*** Significant at $p \leq 0.001$)

Source: Household survey

A paired-samples t-test was computed to compare the average annual household incomes from sunflower sales earned by farmers over three years of engagement in the sunflower value chain upgrading interventions to test for significance. The analysis showed that the average annual household income earned by farmers from sunflower sales in 2014 was significantly higher compared to the average annual household income from sunflower which was earned by farmers in 2012. The average annual household incomes from sunflower of 2012 and 2014 were found to be significantly different at $p \leq 0.001$.

However, despite significant differences in the household income earned by farmers from sunflower sales between 2012 and 2014 as revealed by the analysis, generally the household income earned by farmers from sunflower sales was very low compared to the income they would have earned if the production of sunflower was optimum. In Chamwino District for example, the average annual household income earned by farmers from sunflower sales increased from TZS 61 461.16 in 2012 to TZS 207 868.45. In Kongwa District, the average annual household income earned by farmers from sunflower sales increased from TZS 64 871.62 in 2012 to TZS 143 370.27 in 2014.

Although the annual household income from sunflower sales increased by almost three times as a result of their engagement in the sunflower value chain upgrading interventions, farmers in the study area could not achieve the optimum income that could be earned by those who can produce at the optimum production capacity recommended for Tanzania. The optimum production of sunflower in Tanzania is 3 tons per hectare or 810.9 kg of seeds per acre. Considering that majorities of farmers in the study areas grow sunflower on land size ranging between 2 to 4 acres, the expected sunflower production at household level would have ranged between 1 621.7 kg to 3 243.2 kg.

Using the average price for sunflower seeds that was offered to farmers by traders in the two districts, the optimum household income which was expected from sunflower value chain upgrading interventions in Kongwa District would have ranged between TZS 737 273.47 to 1 474 456.01 in 2012 to TZS 894 578.37 to 1 789 046.42 in 2014. In Chamwino District, the optimum household income which was expected from sunflower value chain upgrading interventions would have ranged between TZS 724 137.7 to 1 448 186.1 in 2012 to TZS 933 353.22 to 1 866 591.33 in 2014. These figures are far higher than the income from sunflower that was earned by farmers in the study area.

FGD participants in Banyibanyi, Mkutani, Msunjilile and Sejeli villages highlighted that, together with a number of engagement processes, the slight increase in income from sunflower sales was associated with an increase in sunflower production attributed to the adoption of best agronomic practices by farmers, market linkages, better price, and other upgrading strategies and innovations that were promoted to address sunflower value chain constraints in the study areas. In Chalinze, Chinangali and Manchali villages, participants in FGDs said that the increase in household income from sunflower was associated with improved access to reliable markets and better price due to proximity of their villages to the Dodoma to Dar es Salaam highway and increased adoption of the crop by farmers due to its high market potential.

Another factor that was mentioned by participants in FGDs to have contributed to increased income from sunflower production is the expansion in farm size allocated to the sunflower crop by households in the value chain. Value addition interventions such as sunflower oil processing, availability of improved storage facilities and introduction of a collateral management system that enabled processors to acquire loans more easily from the CRDB Bank for investment in the sunflower businesses also stimulated farmers' engagement and investment in sunflower production leading to more income.

Participants in FGDs claimed that farmers who treated sunflower farming as business opportunity were able to produce more seeds which in turn enabled them to optimise their incomes. Other studies have also reported similar findings. Adegbola *et al.* (2017) have found that farmers' participation in the MSP processes which were designed to upgrade rice value chain in Benin contributed to increased revenue and yield as a result of trainings on the technical production itineraries which helped them to obtain higher

production. The same study also revealed that the selling price of rice of farmers in the MSPs was higher because of the bundling they did within the MSPs and through improved access to inputs which significantly reduced the costs of production.

Other sources of income that contributed to increased household income were food crops, fruits and vegetables, non-farm businesses, labour force, sales of local chicken, ducks, livestock (cattle, goats, pigs) and income from fishing. To understand their contribution to the cumulative household income, descriptive analyses were performed to compute the average household incomes from other sources per year and per district. Table 8 presents the findings of average household incomes accumulated by farmers from other sources of income excluding income from sunflower sales.

Table 8: Compared annual household income from other sources (TZS)

Assessment level	Period	Mean	N	t-value	p-value
Chamwino District	2012	770 747.57	103	-3.534	0.000***
	2014	897 127.18	103		
Kongwa District	2012	652 891.22	148	-3.177	0.000***
	2014	775 885.13	148		

*** Significant at $p \leq 0.001$)

Source: Household survey

The analysis showed that the means of average annual household incomes from other sources were higher in 2014 compared to those of 2012. A paired-samples t-test statistical analysis was performed to assess the level of significance between incomes of 2012 and 2014 from other sources. It was found that the average annual household incomes from other sources of 2012 and 2014 were significantly different at $p \leq 0.001$ in Chamwino and Kongwa Districts.

In Chamwino District, the average household income earned by farmers annually from other sources increased from TZS 770 747.57 in 2012 to TZS 897 127.18 in 2014 while in Kongwa District, the average household income earned from other sources increased from TZS 652 891.22 in 2012 to TZS 775 885.13 in 2014. These results indicate that sunflower producer farmers in Chamwino and Kongwa Districts have recorded as well increases in household income earned from other sources. The increase in income from other sources was influenced by the adoption and application of the knowledge on good agronomic practices and entrepreneurship they acquired through their engagement in the sunflower MSP processes to produce other crops and undertake non-farm businesses.

The slight increases in the annual household incomes were also reported by participants in FGDs in all villages, both from sunflower sales and income from other sources. FGD participants attributed the increases in the household incomes to the increased innovative capacity of farmers to apply knowledge and skills acquired through various capacity building interventions in other productive and remunerative activities. They also associated the increase in household income with the increased adoption and application of good agronomic practices in the production of other food crops, and investment in livestock keeping and non-farm businesses which in turn enabled them to generate additional income.

From these findings, we learn that although sunflower value chain interventions did not target the promotion of other commodities, the knowledge on good agronomic practices, entrepreneurship and business skills development acquired by the MSP members through sunflower interventions was also applicable to other subsector commodities. While sunflower value chain interventions such as capacity building on application of GAPs, market linkages and value addition were designed to improve sunflower production and

income, the knowledge and skills acquired by farmers through these activities were also applied in the production and marketing of other crops and other remunerative activities.

This implies that the engagement of farmers in the sunflower MSP processes has increased their creativity and innovative capacities to explore untapped opportunities to increase their income. The impact of farmers' involvement in the sunflower value chain upgrading interventions was not only limited to the increase in sunflower production and income. The engagement of farmers in the sunflower MSP processes enabled them to discover new investment opportunities that enabled them to optimise their incomes and improve their living conditions.

Another aspect which was used to measure the changes in income at household level as a result of MSPs' performance was the total household income which is the summation of all incomes earned at household level. Descriptive analyses were performed to compute the means of average of total household in the two districts. The findings on the total household income from household interviews are presented in Table 9.

Table 9: Compared average total annual household income (TZS)

Assessment level	Period	Mean	n	t-value	p-value
Chamwino District	2012	832 208.7	103	-6.556	0.000***
	2014	1 104 995.6	103		
Kongwa District	2012	717 762.8	148	-5.156	0.000***
	2014	919 255.4	148		

*** Significant at $p \leq 0.001$)

Source: Household survey

The analysis shows that the means of average total annual household incomes of 2014 were higher than that of 2012 in the two districts. A paired-samples t-test statistical analysis was also performed to assess the level of significance between the averages of total household incomes of farmers in the study area over three years of engagement in

the sunflower MSPs activities. The analysis showed that the averages of total annual household incomes earned by farmers in 2012 and 2014 significantly different at $p \leq 0.001$ in the two districts.

In Chamwino District, the average total annual household income increased from TZS 832 208.74 in 2012 to TZS 1 104 995.63 in 2014. In Kongwa District, the average total annual household income of farmers in the sunflower MSPs increased from TZS 717 762.84 in 2012 to TZS 919 255.40 in 2014. These findings indicate that farmers who were involved in the sunflower MSPs were able to apply efficiently the knowledge on food production, marketing skills and entrepreneurship they acquired through capacity building interventions to boost their income.

During FGDs in Manchali, Chalinze and Chinangali villages, FGD participants claimed that in 2014, the weather conditions and rainfall distribution were relatively good to support sunflower production. They reported that sunflower production was relatively good in 2014 compared to previous cropping seasons, leading into increased income from sunflower sales. The increase in the annual household income from sunflower sales and the diversification of income sources by farmers in the sunflower MSPs processes had contributed to an increase in the overall annual household income of farmers in the study area.

This implies that the knowledge and skills of crop production and marketing acquired by farmers through their engagements in the sunflower value chain interventions had improved their innovative capacities, business skills and ability to tackle other production constraints. Tukahirwa *et al.* (2013) have also reported that MSPs can build the innovative capacity of members to address the specific challenges facing members of platform.

As expressed by some key informants and FGDs' participants, the increase in total household income was influenced by the increased farmers' adoption and application of good agronomic practices acquired through various multi-stakeholder engagement processes in the production of sunflower and other crops. The increase of the innovative capacity of farmers to diversify their sources of incomes by exploring other untapped opportunities was an ingredient towards these successes. The study revealed also that the adoption and application of GAPs in the production of other crops and investment in different remunerative activities significantly contributed to the increase in total household income of farmers in the project area.

Nevertheless, the changes in the total household income indicate that smallholder farmers in Chamwino District were better-off compared to farmers of Kongwa District. The main reason associated with these differences is that villages that were visited during this study in Kongwa were located in remote areas while villages visited in Chamwino were located along the highway Dodoma to Dar es Salaam where social services including marketing of farm products are easily accessible to farmers.

Dusengemungu *et al.* (2014) found that the use of MSP approach in the maize value chain upgrading had resulted among other things, into increased maize production, improved access to extension services and inputs. The same study showed that the use of MSPs approach in maize value chain upgrading has increased household income and livelihood security of farmers. In maize value chain upgrading in Rwanda, MSP approach was reported to have strengthened social networks of actors and improved the skills and knowledge of platform members through capacity building interventions.

4.3.2 Changes in households' access to food in view of MSPs performance

While sunflower value chain interventions were designed to address a number of constraints faced by sunflower producers and processors, the ultimate goal of these initiatives was to improve the growth of the sunflower subsector and the living conditions of smallholder farmers. During household survey and key informant interviews, respondents were requested to indicate the number of meals they were consuming in a day before they engaged in the sunflower MSPs processes and the number of meals they were consuming per day after three years of engagement in the sunflower value chain upgrading interventions.

The findings from household survey show that the number of households accessing three meals per day in 2014 has increased compared to that of 2012. Table 10 presents the findings on changes in the number of meals that were consumed by farmers per day over three years of engagement in the sunflower MSPs processes.

Table 10: Changes in number of meals eaten per day by farmers at household (%)

Number of meals eaten by farmers per day	Kongwa District		Chamwino District	
	2012	2014	2012	2014
Households only eating one meal per day	2.0	1.4	1.0	1.0
Households eating two meals per day	55.4	38.5	54.4	35.0
Households eating three meals per day	42.6	60.1	44.7	64.1

Source: Household survey

However, the findings from key informant interviews revealed diverse views with regards to the availability and access to food by farmers. According to the findings from key informant interviews, Village and Ward Executive Officers working the villages visited during data collection reported that the improvement in the availability and access to food at household level was not only influenced by the increase in sunflower production and income from sunflower seeds sales.

They said that the positive changes in terms of food availability and access at household level were the result of the increased capacity of farmers to reproduce more sunflower and other crops, increased capacity to engage in other remunerative activities, and increased purchase power due to increased household income. These factors are associated with learning and stakeholders' engagement in the MSPs processes.

The analysis of data from household survey showed that in Kongwa District, the number of households consuming three meals per day increased from 42.6% in 2012 to 60.1% of total respondents in 2014 while in Chamwino District, the number of household consuming three meals per day increased from 44.7% in 2012 to 64.1% of total respondents in 2014. These findings imply that farmers in the sunflower MSPs had increased the ability to get more meals a day than before their engagement in the sunflower value chain upgrading interventions.

This is because the knowledge and skills they acquired on improved crop production enabled them to produce more food crops and store food for longer periods than before sunflower value chain interventions. The increase in household income had also increased the capability of farmers to purchase more food in the case of necessity to address any food shortage. Through their engagements, farmers were able to increase their income that was used to buy more food and other basic home requirements. The findings from FGDs and key informant interviews also showed that farmers were able to invest in the production of other food crops using income from sunflower and through application of knowledge and skills they acquired through capacity building which in turn increased their ability to get more food reserves at home.

Although it cannot be generalized across all households, participants in FGDs almost in all villages said that they may sometimes skip breakfast, not only because they cannot afford to get it, but in order to serve more time to engage in other important activities. This implies that eating few meals per day cannot always mean the inability of the household to get it. However, some studies have shown that in famine prone areas, one of the strategies used by households faced with food shortages to cope with the situation is to skip some meals and reduce food intakes (Myeya and Kamangu, 2016). In this study, responses from participants in FGDs showed that there are farmers in the study area who have used this strategy to cope with food shortage.

The second indicator was the number of households who were relatively food secure per month annually with sufficient quantities of food from own production before and after engagement in the MSPs processes. The analysis showed a slight improvement in terms of food availability and access at household level. The analysis shows that in 2012, half of the total households surveyed could only keep own produced food for a maximum of six months per year. In 2014, the analysis revealed that, at least half of the households surveyed were able to keep sufficient quantities of food from own production up to eight months per year (Figure 6).

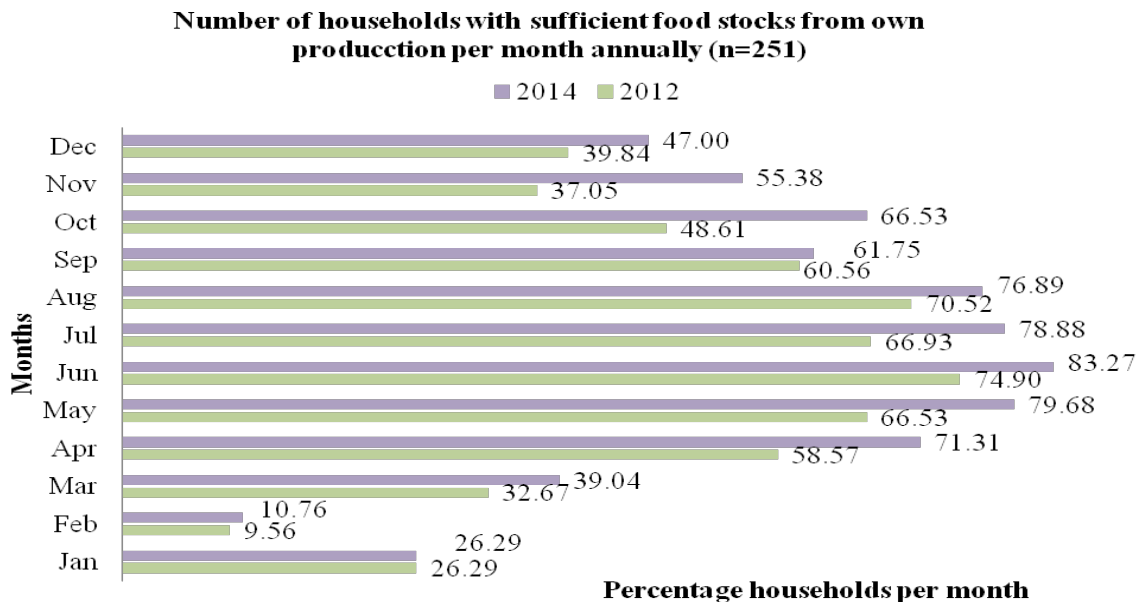


Figure 6: Number of households with sufficient food stocks from own production per month annually

Source: Household survey

From the analysis, it was found that majority of households interviewed largely experienced food shortage between the month of December and March every year. This trend was almost similar in all villages visited during the study. Despite the increased engagement of farmers in the sunflower MSP processes and sunflower business, yet the months of December, January, February and March remained critical in terms of severe food shortage to the majority of households in the study area. This implies that the impact of sunflower value chain interventions on improving the availability of food at household level was not completely achieved. Participants in female FGDs said that in the month of February for example, most of the families have no food stocks at home.

They relied on selling labour or on the income from non-farm businesses such as fish business, running small restaurants and shops or selling local chicken and other livestock to get money for buying supplementary food. Some studies have also found that

household access to food can be measured in terms of labour supply and possession of cash to buy food (Kayunze and Mwageni, 2013) or in terms of valued assets like livestock, farms and other assets which can easily be sold to get cash to buy food (WFP, 2013).

The third indicator used to measure the level of food availability and access at household was the number of households that were necessarily obliged to buy food to complement own produced food per year. The findings from household survey showed that from 2012 to 2014, the number of households who were obliged to buy additional food to complement their own produced food decreased from 21.1% to 3.9% in October, from 22.3% to 4.3% in November, from 24.3% to 0.4% in December, from 29.1% to 14.7% in January, from 62.5% to 37.4% in February and from 34.6% to 26.3% in March (Figure 7).

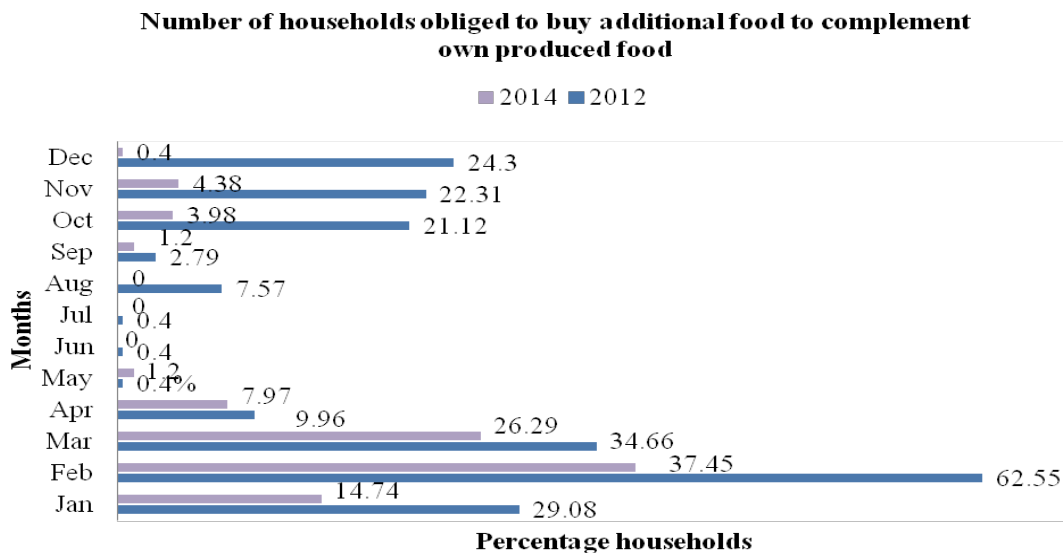


Figure 7: Number of households that were obliged to buy additional food

Source: Household survey

These findings imply that farmers in the study areas were relatively better-off in terms of food availability at household level in 2014 compared to the situation in 2012. Majority of them had improved their food availability at household level as they were able to keep

sufficient food stocks from their own production throughout the year in 2014, which in turn contributed to improved state of household access to food. These findings also confirm the findings in the section above which revealed that January, February and March were still the critical months during which the majority of households were experiencing severe food shortage. If this is the situation in the households whereby members claimed to have improved their living standards as a result of their engagements in the sunflower MSPs processes, the state of food availability and access to those who were not part of sunflower MSPs processes could be worse.

The fourth indicator to measure changes in food availability and access was the number of households that experienced severe food shortage. The analysis showed that from 2012 to 2014, the number of households that experienced severe food shortage had decreased from 13.9% to 7.1% in January, from 54.5% to 37.1% in February and from 26.2% to 21.1% in March as a result of sunflower MSPs performance (Figure 8).

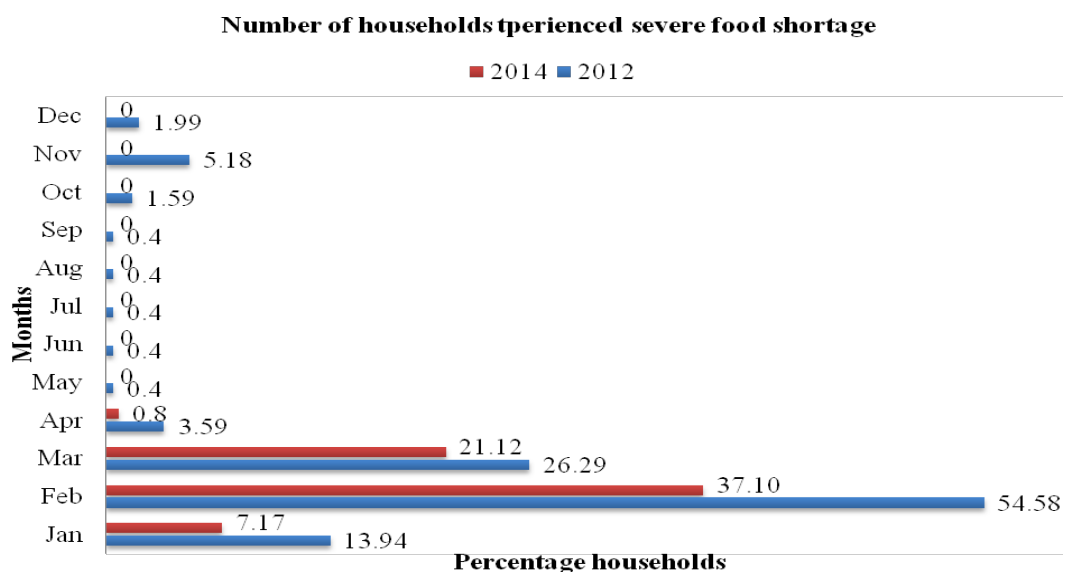


Figure 8: Number of households that experienced severe food shortage

Source: Household survey

The above findings imply that as a result of their engagement in the sunflower MSPs processes, the number of households experiencing severe food shortage significantly decreased in 2014 compared to 2012. The implication from this analysis is that, as a result of stakeholders' engagement in the sunflower MSPs processes, the number of households who were food secure throughout the year increased from 86.0% in 2012 to 92.8% in 2014 for the month of January, from 45.4% in 2012 to 62.9% in 2014 for the month of February and from 73.7% in 2012 to 78.8% in 2014 for the month of March.

To summarise, the findings from the above four indicators show a substantial improvement in terms of food availability and access in the households that participated in the household survey. On the one side, the adoption and application of good agronomic practices and other market oriented innovations by farmers have improved household production of sunflower and other food crops by farmers in the MSPs processes. The increased household income from sales of farm and non-farm produces as well as shares from VICOBA have increased the ability of farmers to invest in more remunerative activities to diversify their income sources, leading to increased ability of farmers to buy food in case of necessity.

The improved availability and access to food by households in the sunflower value chain upgrading initiatives may have been influenced to a large extent by the increased ability of farmers to produce more food through application of good agronomic practices and increased household income from sales of on-farm and non-farm products and shares from VICOBA savings. These results support the arguments of stakeholders interviewed through this study who believe that the use of multi-stakeholder platform approach in the promotion of sunflower value chain had contributed to improved living conditions of farmers in the study area. The findings presented in Figure 6, 7 and 8 show that, although

most of smallholder households in Dodoma Region are prone to food shortages during some months of the year, majority of households in the sunflower value chain upgrading interventions have improved their ability to have enough food for longer periods of time per year than it was before their engagement in the value chain.

4.4 Factors that Influenced the Performance of Sunflower MSPs in Dodoma

The fourth objective of the study was concerned with the identification of factors that influenced the performance of sunflower MSPs to achieving the development outcomes of sunflower value chain initiatives. Four major categories of factors were identified through this study. These include: Structural factors: nature, composition and capacity of actors of MSPs; institutional factors: policy, rules and business working environment; facilitation, coordination and management capacities; and incentives and other benefits accrued by MSP members. However, before discussing the above four categories of factors that influenced sunflower MSPs' performance in Dodoma, let us discuss first key challenges that were faced by actors in the sunflower value chain that limited or hindered stakeholders' participation and engagement in the MSP processes.

Despite rigorous selection and screening process that was followed to establish sunflower MSPs to get well committed and competent members, the findings from key informant interviews and FGDs showed that stakeholders' engagement processes were not as smooth as it was expected to be. Various challenges were mentioned by participants in FGDs in all villages and sunflower processors to have limited their participation and effective engagement in the MSP processes. Through analysis of data from FGDs and key informant interviews, it was found that some of the challenges mentioned were within the capacities of MSPs facilitators while others were beyond the control of platform

members. A summary of issues that limited stakeholders' participation and engagement in the sunflower MSP processes in Dodoma Region is presented in Figure 9.

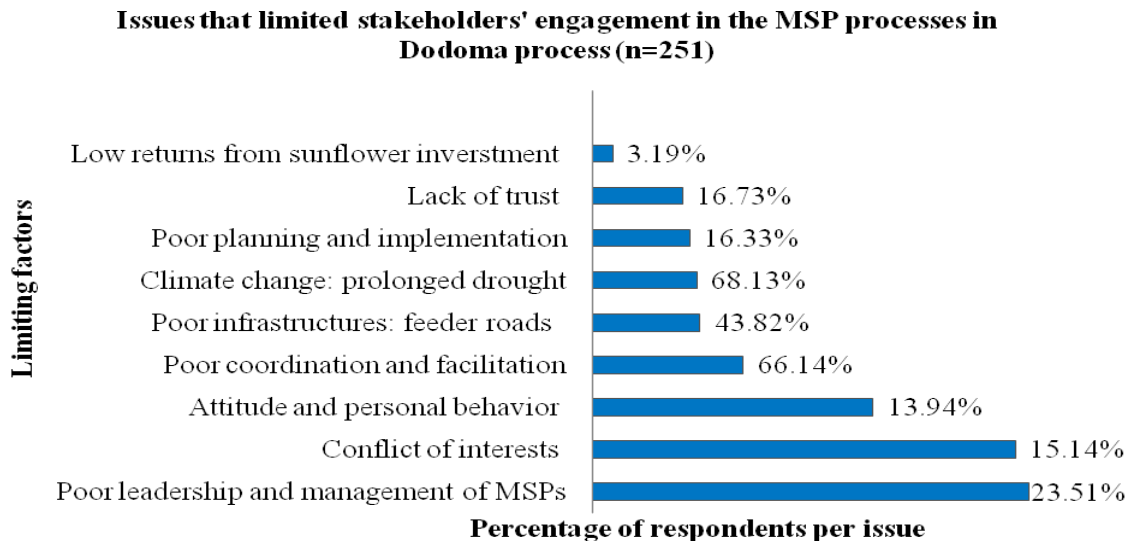


Figure 9: Issues that limited stakeholders' participation and engagement in MSP processes in Dodoma Region

Source: Household survey

While most challenges could easily be handled by MSPs facilitators, issues such as prolonged drought due to climate change and poor rural infrastructures that limited mobility and accessibility to some remote villages such as Mkutani were beyond the capacities of MSPs members. The analysis showed that about two-thirds (68.1%) of the respondents to household interviews claimed that poor leadership and management capacities of producer groups and MSPs coordination committees were the main factors that limited participation of value chain actors in the implementation of MSP activities.

The same analysis showed 66.1% of respondents were of the view that low engagement of actors in the MSP processes was influenced by conflicts of interest, while 43.8% attributed the low stakeholders' participation to unsupportive attitude and behaviour of MSP members to cooperate with others. The interpretation from these findings is that the

level engagement of value chain actors in the MSP processes highly depends on the willingness of individual members, competencies and capacities of MSP leaders to coordinate value chain activities. Thus, the level of engagement of value chain actors in the MSPs processes depends on the trust that members of MSPs develop in the leaders and other members of the platforms.

Other issues that negatively affected stakeholders engagement and participation were poor facilitation (technical and financial support), poor rural infrastructure from farms to residential areas and market centres, prolonged drought due to climate change, lack of trust among members, low productivity and low returns from investment in the sunflower production. These findings are also supported by other studies which found that, in MSP processes, it is sometimes difficult to attain full participation and engagement of every member of the platform in all planned activities (Hemmati, 2002). It was also found that every stakeholder in the sunflower MSPs processes, particularly those who were leading the implementation of some specific strategies to address sunflower constraints at different levels of the value chain had different personal and organisational objectives, capacities and skills which defined their roles in the value chain upgrading process.

At some point, it was difficult for the lead implementers to play their roles with certain neutrality as they had to comply with their objectives while following, at the same time, the orders of donors or initiators of the platforms who gave them money to implement certain actions. Other studies have found that MSP facilitators also called brokers, sometimes found themselves in situation that requires them to follow the donor's expectations. Nederlof *et al.* (2011) argue that following donors' expectations may influence the direction in which the platform is heading or may put pressure onto members of the platforms to implement a large number of activities within a short period

of time. The performance of sunflower MSPs in Dodoma was influenced by four major types of factors and each factor had positive and negative effects on the performance of MSPs depending on how it was addressed by actors in the MSP processes. A detailed account of key factors that were found to have an influence on the performance of sunflower MSPs are discussed in the subsections below.

4.4.1 Structural factors: Nature of MSPs and stakeholders' composition

MSPs used for sunflower value chain upgrading in Dodoma Region are collaborative networks which were formed to facilitate stakeholders' interactions to discuss together the challenges of sunflower value chain and find appropriate solutions to address them. Key informant interviews revealed that the nature and composition of actors of sunflower MSPs depended on the development objectives sunflower value chain initiatives aimed to achieve, the levels of stakeholders' engagement, available resources to support MSP operations and their understanding of the local context where MSPs processes took place. Through key informant interviews, one of the project officers at RLDC reported that the selection of MSPs members and allocation of tasks was informed by their experience, technical and financial capacities they had to support MSPs activities and the roles they play in the value chains.

The position and influence some actors had over the platform agenda and in their respective communities also guided MSPs support organisations to allocate them specific tasks. It was also found that the relevance of selected intervention strategies to improving food security and living conditions of stakeholders in the value chain also increased the commitment of members to engage intensively in the MSPs activities. One field officer from INADES Tanzania, one of the lead implementers of MSP activities in Kongwa and Chamwino Districts said that "stakeholders who had already ongoing activities along

sunflower value chain easily joined the platforms”. Key informants interviews also showed that technical and financial capacities of Oxfam Tanzania and RLDC were an ingredient to tie together stakeholders and keep them committed to the platform agenda.

The documentary review showed that the capacities of sunflower value chain actors and their understanding of the context where MSPs were set to operate were important aspects to consider in assigning specific tasks and roles to sunflower MSPs members. Sunflower MSPs in Dodoma Region involved heterogeneous groups of stakeholders with different objectives, interests and competencies required to perform specific functions along the value chain. Generally, MSPs for food value chain upgrading always require adequate human and financial capacities for the platforms members to perform their functions. Some studies have also revealed that the establishment and management of an MSP require sufficient resources and investments both in terms of time and other resources needed for its functioning (Hemmatti, 2002; Nederlof *et al.*, 2011; Tenywa *et al.*, 2011 and Dentoni, 2012).

However, the resources and capacities of MSP members may vary from one platform to another depending on a number of reasons. Through this study, it was found that MSPs coordination committees that were set to coordinate sunflower value chain upgrading interventions could not continue to operate after the two interventions phased out due to lack of financial resources to support their activities. This implies that RLDC and Oxfam Tanzania did not thoroughly take into consideration issues of sustainability. To ensure that established platforms are continuously functional after phase-out of specific project interventions, MSPs initiators and facilitators need to develop and implement from the start of the interventions an exit strategy clearly indicating how members of the platforms will mobilise resources necessary to support MSP operations.

Some studies have identified a number of aspects that may determine the resources needed to support the implementation of specific platforms' activities. Schut *et al.* (2018) argue that the resources needed for operationalising an MSP vary depending on the type of organisations that are supporting the MSP processes, type of innovation that is being explored, level at which the platform is operating, number of MSP members and the type of support functions that are required. Through this study, it was found that some actors were provided financial resources and physical equipment by RLDC and Oxfam Tanzania to support their activities depending on the role they played in the sunflower value chain upgrading process while others were not.

Other aspects that may determine the costs for running an MSP are new activities that may emerge as the platform starts to operate, proximity of facilitators to the implementation sites and time needed for preparing, holding and following-up on meetings, time needed to organise general exchange, searching for compromises and documentation of MSPs outcomes. Some members of CEZOSOPA reported to have accrued over time some benefits from their engagement which kept them committed to pursuing activities related to sunflower MSPs activities. It was found that the increased motivation and commitment of some actors to the implementation of MSPs activities has led to increased synergy and collaboration among actors, resources sharing and allocation to some specific activities by some actors and increased investment by actors in the sunflower related business.

However, the activeness and sustainability of sunflower MSPs was not certain. In all villages covered by the study, leaders of PMCs' coordination committees interviewed either through key informant interviews or those who participated in FGDs said that it has been very difficult to organize internal platform meetings or activities due to lack of

financial resources to support members' participation. This implies that the implementation of MSP activities exclusively depended on the project funds with little or no contributions from the platform members. As a consequence, PMCs, sunflower produce groups and the platforms which were set to manage storage activities automatically became less functional after the phasing out of the two initiatives.

Community based platforms which remained functional were those with activities capable to generate income such as VICOBA and SACCOS. It was found that members of MSPs with substantial financial capacities to contribute to MSP activities had more voice and power to influence the decision-making process on the issues of platforms while platform members with limited financial capacities intended to implement the orders from resourceful actors or that from the sunflower value chain lead implementing organisations. FGDs participants in Sejeli, Chinangali and Chalinze villages where PMCs were operating indicated that farmers in those villages had more advantage to use the processing facilities for oil extraction than those living in other villages. It was also found that farmers in Sejeli, Chinangali and Chalinze villages had better chance to sell sunflower at higher price than others due to their proximity to the Dodoma Dar es Salaam highway.

4.4.2 Institutional factors: policies, regulations and business environment

One of the key functions of multi-stakeholder platforms is to undertake lobbying and advocacy to ensure that available policies and market systems are favourable and supportive to development of particular businesses. Through key informant interviews with sunflower value chain support institutions, various policy and business environment related constraints that hindered the performance of the sunflower subsector were identified. Management staff at RLDC and Oxfam Tanzania and processors operating in

Dodoma indicated that policy issues that required advocacy interventions to influence changes included poor coordination of the subsector, lack of vertical or strategic linkages among support institutions, business certification procedures, quality control, use of standards and measures, and tax related issues such as produce cess management and control, value addition tax (VAT) and import duty.

The findings from documentary review and key informant interviews show that poor coordination of the sector was due to the weak capacity and lack of the necessary expertise and resources to offer effective support to sunflower subsector development. Probably, making an inventory of all key stakeholders in the subsector would have enabled identification of potential actors who could assume the coordination role. According to key informants, the presence of comprehensive policies and frameworks to regulate sunflower subsector operations may prevent contamination of seeds and adulteration of oil, reinforce the use of standard weights and measures, and ensure availability and access to sufficient market information which would empower the farmers and the other local stakeholders to be competitive.

While it was expected that stakeholders' engagement in the sunflower MSPs processes would improve market linkages between producers and sunflower actors from urban areas and district beyond the project areas, FGDs participants expressed their concerns that sunflower market in the study area is still controlled by middlemen. Table 11 presents the findings of market actors who were buying sunflower from farmers in the study area. It was believed that market linkages would increase market competition for sunflower, resulting into increased price for sunflower and more income to farmers.

Table 11: Main buyers of sunflower seeds from producer farmers

Type of buyers	Respondents to household interviews (n=251)	
	2012	2014
Not selling sunflower	4.6%	2.2%
Neighbouring farmers	15.9%	3.9%
Middlemen	60.1%	65.1%
Urban traders	17.0%	20.1%
Processors	2.4%	8.7%

Source: Household survey

However, the findings from household survey in Table 11 show that, instead of decreasing, the number of farmers selling sunflower to middlemen had increased. It was found that farmers who sold sunflower to middlemen increased by 5% i.e. from 60.1% in 2012 to 65.1% in 2014. These findings imply that middlemen are important key players in the sunflower marketing in the study districts. While in general a lot of hostility is directed at the middlemen from both ends of the value chain, the findings show that they are the ones who handle the initial evacuation of sunflower products from the farms or villages to the markets although the price offered to farmers seems to be lower than expected.

The problem of mistrust revealed through this study towards middlemen was influenced by the manipulations done by middlemen over the price offered to farmers by acting as brokers between farmers and urban traders. The manipulation over the price offered to farmers is influenced by low production and lack of appropriate transport infrastructure to attract urban traders and processors to buy sunflower seeds directly from farmers. Direct linkages of farmers to urban traders and processors would allow each party to reduce transaction costs by reducing the big profit margin claimed to go to middlemen as a means to improve their profitability while increasing market completion among traders.

In terms of policy environment, the findings from key informants show that there are a lot of issues that still require policy actions for the subsector to perform better and benefit stakeholders in the value chain upgrading. The harmonisation of sunflower subsector related policies would therefore support the growth of the subsector and returns to every actor in it. Despite that, it was found that sunflower MSP activities related to lobbying and advocacy that were carried out by MPS members have yielded positive outcomes.

The current agricultural policies, rules and regulations are becoming increasingly supportive to sunflower subsector development than they used to be in the past. The National Agricultural Policy of 2013 recognises sunflower as one of the priority cash crops in the central zone of Tanzania and in Dodoma Region in particular (URT, 2013b). Members of CEZOSOPA and TASUPA who responded to key informant interviews were of the view that the observed policy related changes were the outcomes of a series of consultations and policy engagement dialogues that were carried out by sunflower MSP members.

A good example of policy change achieved through lobbying and advocacy interventions mentioned by key informants was the formulation of the Tanzania National Sunflower Sector Strategy (URT, 2016b). Cadilhon *et al.* (2016) also reported that the Tanga Dairy Platform was very successful to lobby policy makers to reduce value-added tax on dairy inputs and products, and remove limitations on urban dairy farming in Tanga City. The aim of the strategy is to support structural improvements of the sunflower subsector's operations.

The strategy defines specific market opportunities and potential areas for investment. The presence and implementation of this strategy would certainly improve the policy

environment leading into improved business environment for sunflower actors. Some studies have also reported similar findings. For example, Adekunle *et al.* (2012) found that the presence of enabling public policies and regulations to ensure competition and actors' compliance with minimum standards often provides a solid foundation for proper functioning of an MSP. Despite these achievements, sometimes having good policies in place may not always imply successful implementation of the proposed reforms to achieve desired development outcomes.

For instance, the strategy requires that stakeholders themselves shall finance specific activities they feel will contribute to the value chain outcomes which may not be practically possible. While the Tanzania National Sunflower Sector Development Strategy strongly promotes sunflower subsector commercialization, it does not propose appropriate mechanisms to support important aspects related smallholder engagement to achieve increased production of sunflower quantities required to feed the processing component of the chain. This challenge is also coupled with limited access to services and inputs, and poor rural infrastructural development such as feeder roads and lack of access to electrical power that limited actors to maximize profits from sunflower production.

4.4.3 Organisational and individual capacities of members to manage MSPs processes

One of the strategies used to improve the performance of sunflower subsector was first to build the institutional capacities of MSPs members in order to improve the quality of services geared towards achieving intended value chain development outcomes. FGDs with farmers in the study villages and key informant interviews with leaders of PMCs, processors associations, LGAs extension workers and technical staff working with RLDC, Oxfam Tanzania and INADES Tanzania revealed that sunflower interventions had

improved to some extent the skills and competencies of MSP members required to contribute to the desired value chain outcomes. Capacity building activities that were designed to strengthen the competencies of MSPs' members include training workshops, stakeholders' meetings and learning visits. These activities were designed based on the specific knowledge gaps identified in each particular stakeholder group and the outcomes they were contributing to.

However, smallholder farmers and leaders of community based MSPs interviewed through FGDs and key informant interviews reported that sunflower producer groups and platforms with no income generating activities could not sustain after project phase out due to the limited capacities of platforms members to support their participation the SMPs related activities. This implies that sunflower MSP operations highly depended on the financial support from RLDC and Oxfam Tanzania to take place. Participants in FGDs also reported that poor leadership, low motivation and low commitment of MSPs' leaders to the MSP activities limited their performance and sustainability of value chain outcomes.

During FGDs in Chalinze, Msunjilile and Sejeli villages, it was found that conflicts of interest among PMCs members was the main factor that limited PMC members to effectively participate in the implementation of sunflower value chain upgrading activities. As a consequence, many leaders of coordination committees and ordinary members dropped from sunflower platforms. It was also found that leaders of few MSPs which remained active after the phasing out of sunflower interventions played a vital role in the conflict management to keep harmony among members of the platforms. In some villages however, leaders of MSPs were competent enough to keep members of the platforms together.

In Manchali and Banyibanyi villages, it was found that the leaders of PMCs were very strategic and dedicated to ensure that conflicts of interests are amicably and positively solved to keep stakeholders focused on the issues of PMCs. It was also found that the availability of adequate resources both in terms of time, technical and financial capabilities required for sunflower value chain upgrading was the main driving factor that kept sunflower actors committed and engaged in the implementation of value chain activities.

In relation to capacity building, Sanyang *et al.* (2016) have found that for MSPs to perform better to achieve the desired outcomes, the competencies and skills of facilitators and other members need to be strengthened through training, coaching and mentoring so that they can effectively support multi-stakeholder platform processes. These aspects were addressed by sunflower MSPs actors although the outcomes could not reach the expected level. Despite technical and financial resources that were allocated by RLDC and Oxfam Tanzania to build the institutional capacities of MSP actors, very little effort was made to ensure continuity and sustainability of sunflower value chain outcomes.

It was found that actors who were actively engaged in the sunflower business after the two value chain interventions were phased out are those who have economic gains from their involvement. Among those include sunflower producers, processors, local and urban traders and input suppliers. Those with no direct economic benefits such as public and private agricultural extension officers, NGO officials, farmer groups and networks that were used for piloting promising upgrading innovations and MSP coordination committees had limited or no involvement in the sunflower business.

4.4.4 Motivational factors and Incentives to MSP members

Material and non-material incentives are some of the aspects that can lead to continuous engagement and participation of stakeholders in the MSPs processes. The findings from key informants and FGDs revealed that when the support from RLDC and Oxfam Tanzania ceased, the functioning of most coordination committees of sunflower MSPs also stopped. This is because most of MSPs members, specifically those who had no direct benefits from the engagement process and farmers could not get financial means to support their participation. In this study, it was found that members of the platforms with direct benefits were highly motivated and willing to commit their resources to the implementation of specific MSPs activities.

However, it may not be possible for an MSP to yield incentives that satisfy the needs of every member of the platforms to keep them engaged in the MSPs processes. While an initial support is needed from MSPs support institutions to invite as many stakeholders as possible, its sustainability is very challenging and sometimes even impossible. In most cases, membership in multi-stakeholder platforms is voluntary and driven by members' ambition to accomplish certain specific objectives. This provides space for those members of the platforms who feel that the platforms are not benefitting them sufficiently, or those who feel that their mission of being members of the platforms have been accomplished to be free to leave the platforms at any time they want.

In all villages covered by the study, it was found that the gradual increase in sunflower production recorded by farmers, stakeholders' engagement in the capacity building interventions, the increase in household income, improved availability and access to food at household level, improved access to extension and advisory services, access to financial capital by processors and the increased financial capacities of farmers through

VICOBA were key motivational factors that kept members of sunflower MSPs committed to involvement in specific activities of the platforms.

The combination of various interventions related to institutional capacity development, production, value addition and marketing attracted the attention of many actors to engage in sunflower business. The improvement in sunflower production and marketing, financial linkages and access to loans from formal and informal financial institutions were reported by key informants to have led to increased motivation and willingness of some processors and farmers to commit more resources to sunflower business. Ergano *et al.* (2010) also found that where market access for value chain products is good and where the range of actors is reasonably broad and diverse, MSPs are able to realize more promising results.

During FGDs in Mkutani and Banyibanyi villages, participants explained that members of PMCs and other community members at large have started to diversify their sources of income through engagement and investment in other new remunerative activities such as production of other food crops for commercial purposes, savings and lending services, poultry keeping, horticultural production, operating small shops, restaurants and other non-farm businesses. Participants in FGDs in those villages and VEOs and WEOs reported that the use of MSP approach to bring together sunflower actors along specific thematic areas, particularly organising farmers into production and marketing groups and associations was the main motivating factor to keep farmers committed to the platform activities.

In so doing, the approach has improved social networking and collaboration, linkages and access to services and technologies, increased trust, brotherhood and mutual support

among MSP members. Some authors have as well reported that the performance of an MSP can only be achieved if members of the platform have shared visions, well-established linkages and information flows amongst actors, conducive incentives that enhance cooperation, adequate markets, supportive legislative and policy environments, and well-developed human capital (Spielman *et al.*, 2008; Brooks and Loevinsohn, 2011).

CHAPTER FIVE

5.0 CONCLUSIONS AND RECOMMENDATIONS

The overall objective of the study was to assess the contribution of MSPs in the implementation of food value chain upgrading interventions aimed at improving food security and livelihood of smallholder farmers in Tanzania. To address this objective, the study applied multi-stakeholder theories and concepts to understand the role of MSPs that were set to implement sunflower value chain upgrading interventions in Dodoma Region. This chapter presents conclusions drawn from the research findings according to the overall objective and the specific objectives of the study which were to: assess the effects of multi-stakeholders' engagement processes on the performance of MSPs set for sunflower value chain upgrading; assess the changes in household income and access to food by farmers in view of the performance of sunflower MSPs; identify factors that influence the performance of MSPs for sunflower value chain upgrading; and identify factors that influence the performance of MSPs for sunflower value chain upgrading.

5.1 Conclusions

5.1.1 MSPs' establishment and selection of actors to implement specific tasks

Setting up MSPs for food value chain upgrading is a complex and context specific process. The process of establishing an MSP depends on the challenges faced by actors that require synergy among actors and collective action, experience of individual actors in the innovation process, technical and financial capacities of actors to support the planned interventions to mitigate the challenges. The establishment of MSPs is highly influenced by socio-cultural and environmental conditions under which they will operate, constraints being addressed, desired outcomes and available resources to initiate the process. Stakeholders' consultations and effective engagement activities are therefore instrumental

for the design, planning, identification of appropriate strategies and selection of MSPs members to lead the implementation of specific interventions at different nodes of the value chain.

For the case of sunflower value chain upgrading in Dodoma Region, the effective engagement and participation of key actors in the design process of sunflower MSPs was very important, not only to stimulate interaction of actors in the innovation process, but also for building the trust among platform members and transferring ownership of the value chain outcomes to the members of platforms. Proper selection of key actors to engage in the MSP processes, good governance and effective coordination of MSPs, equity and accountability of MSPs leaders are key aspects to consider to ensure proper functioning of MSPs. However, the nature, size and composition of actors to engage in the MSP processes vary from one platform to another depending on the scope of interventions, constraints being addressed and the objectives the platform is set to achieve.

5.1.2 Management, coordination and facilitation of MSP processes

The ways multi-stakeholder platforms are managed, coordinated and facilitated have important implications on their functioning and performance to achieve the objectives they are set to reach along specific food value chains. The formation of sunflower MSPs committees to coordinate sunflower value chain upgrading activities at different levels of the value chain was important to ensure that the planned objectives are achieved. Membership composition of these coordination committees was guided by the competencies required to address sunflower constraints at different segments of the value chain. For the case of sunflower value chain in Dodoma, these committees operated at

community level, district level while others were set to ensure the overall coordination and management of sunflower value chain activities.

The role of RLDC and Oxfam Tanzania was to ensure that all resources required for the implementation of value chain activities are timely available. At value chain level, technical experts from RLDC, Oxfam Tanzania and lead implementing partners were responsible for the overall planning, coordination and management of value chain activities. They were also responsible for the provision of technical support to MSPs members; facilitating communication and learning across the value chains. Special interventions to bring together members of coordination committees were also designed and supported by value chain facilitators to keep them actively engaged in the MSPs processes. Stakeholders' workshops and meetings involving representatives from key stakeholders' categories provided space for MSPs members to discuss relevant issues related to sunflower value chain upgrading and to take joint actions.

At district level, the coordination committees were composed of actors selected from sunflower actors operating or residing in the specific district. However, they needed technical support and capacity building from the lead implementing partners and LGAs officials to ensure that they have competencies required to perform the functions assigned to them. While serving as intermediate structures to link community based actors to project level based actors, district committees needed to work in close collaboration with higher level committees to ensure learning and better information flow across all levels of the value chain. Day-to-day field operations were coordinated by leaders of farmers groups, farmer networks, storage committees and PMC committees with support from village and ward extension workers. Nevertheless, capacity building to members and

availability of sources to support multi-stakeholder engagement processes were important factors that contributed to better coordination and management of MSPs activities.

5.1.3 Incentives that kept stakeholders focused and committed to MSP activities

Material and non-material incentives are important aspects to ensure continuous engagement and participation of stakeholders in the MSPs processes. In this study, it was found that members of the platforms with direct benefits from their engagement were highly motivated and willing to participate and commit time and other resources to the implementation of specific MSPs activities. As MSPs are voluntary structures and collaborative networks used to implement joint actions to address common problems, effective engagement and participation of sunflower actors in the MSPs processes was imperative to achieve the desired value chain development outcomes.

Key strategic interventions that were designed to keep MSPs members motivated and committed to the implementation sunflower value chain upgrading activities included those which aimed to generate income to MSP members such as processing and rural microfinance (VICOBA and SACCOS). Other activities were those that aimed to enhance the capacities and competencies of MSPs actors (training workshops and exchange visits) and provision of materials and operational tools required for the implementation of specific activities such sunflower processing machines, construction and rehabilitation of storage facilities.

For instance, it was found that the increased motivation and willingness of farmers to remain engaged in the MSP processes were influenced by an increase in sunflower production, increase in income, capacity building interventions and allowances that supported their participation in the sunflower value chain upgrading activities. Other

incentives were improved availability and access to food by farmers at household level, improved access to extension and advisory services, and income earned from shares from VICOBA savings.

The increase in household income earned by farmers through value addition and marketing activities and access to financial capital and loans from financial institutions was a motivating factor to SMPs members. However, it was very challenging and practically impossible to get incentives that could retain actors with no direct benefits such as extension workers, staff from NGOs and companies that lead implementation of specific activities to remain engaged in the SMPs processes after project phase out. This situation has very serious impact on the continuity and functioning of MSPs and sustainability of value chain outcomes.

5.1.4 Effects of stakeholders' engagements on the performance of MSPs

Despite the challenges and many factors that were found to have limited effective participation of MSPs members in the sunflower value chain upgrading activities, the performance of sunflower MSPs was relatively good in achieving the desired outcomes. Through their participation in various MSP processes, sunflower actors were able to get technical support that equipped them with competencies required for the implementation of selected upgrading strategies. The MSP approach was very useful to bring sunflower actors together to interact, discuss issues of the platforms, plan together, mobilise resources, and combine technical and financial capacities needed to implement selected strategies. The approach was also useful to create synergy and strong voice for advocacy and lobbying for the benefits of value chain actors.

Capacity building to farmers on GAPs, marketing and financial linkages, exchange visits, stakeholders' workshops, meetings and other MSPs' coordination and management activities had vital contribution to the achievement of specific value chain outcomes sunflower MSPs were set to reach along the chains. As result of stakeholders' engagements in the value chain interventions, access to extension services, inputs and improved sunflower seeds varieties had improved. Sunflower production, household income and availability and access to food by farmers at household level also improved as a result from their engagement in the MSP processes.

The use of MSP approach has stimulated proactive smallholder farmers' engagement in sunflower value chain through adoption of improved agronomic practices and value addition. As results, sunflower production and income have increased at households. Farmers have acquired more innovative capacities to engage in more remunerative activities leading to improved access to basic needs including food and other services. In connection with MSP engagements, households which were food insecure can now access easily three meals per day than before their engagement in the MSP processes. Lobbying and advocacy interventions jointly implemented by sunflower value chain actors have resulted into slight improvements in policy and business environment required for sunflower business. However, the level of achievement of sunflower value chain objectives was not significant enough to bring about visible impact that was anticipated on the living conditions of farmers and other actors in the value chain.

5.1.5 Factors that influenced the performance of sunflower MSPs

Although the findings from this study revealed many positive changes in terms of outcomes recorded by stakeholders in the sunflower value chain upgrading, various factors were found to have attribution to those outcomes. These include both internal

factors and external factors to the platforms. Generally, the way these factors are handled by MSPs actors in the innovation process may enhance or hinder the performance of MSPs to achieve the desired development outcomes of specific value chains. For example, the nature of sunflower MSPs, composition of MSPs members and capacity of MSPs actors were the key determinants for the achievement of specific value chain outcomes.

This is because each value chain outcome requires special competencies and resources to achieve it. Therefore, the membership composition of platforms generally depended on the challenges to be dealt with by MSPs actors, their competencies and resources needed to address specific challenges. For instance, the technical and financial capacities of Oxfam Tanzania and RLDC were key inputs to achieve participation of MSPs actors in the value chain upgrading activities, to tie them together and keep them committed to the platform agenda. Poor coordination of sunflower subsector, unsupportive policies, poor processing equipment to produce quality sunflower oil, taxation systems, poor branding, and poor access to finance have limited the competitiveness of sunflower processors to penetrate local and export markets.

The lack of adequate resources and capacities of MSPs members to participate and coordinate sunflower value chain activities had limited the capacities of community based MSPs to remain functional when the project supports ceased. The technical knowhow and competencies of experts from value chain lead implementing organisations were very crucial to improve the capacity of platform members to deliver quality services needed to achieve desired value chain outcomes. Monetary and material incentives accrued by MSPs members were important aspects that contributed to increased engagement and participation of stakeholders in the MSPs processes.

For instance, the failure of some MSPs members to obtain direct benefits from their engagement in the MSPs process has led them to drop out from MSPs immediately when the support from RLDC and Oxfam stopped. Again, this poses risks to the sustainability of the value chain outcomes. Apart from internal factors that affected the performance of sunflower MSPs, it was found also that constraints such as impact of climate change, limited access to market and pests and diseases of sunflower were still persistent, thus limiting sunflower production despite the use of MSP approach to address them.

Again, it was revealed that the distance from the highway from Dodoma to Dar es Salaam had significant impact on the access to services and marketing of sunflower products. The integration of gender related activities in the sunflower value chain upgrading was of paramount importance to foster sustainability of some few value chain outcomes at household level. Nevertheless, the level of performance of sunflower MSPs was highly attributed to the capacities of MSPs members to deliver quality services, mitigate institutional barriers and behavioural changes and conflicts management capacity to build trust among MSP members and keep them focused on MSP business.

5.2 Recommendations

In view of the conclusions drawn from this study, the following recommendations are made to improve the performance of MSPs for food value chain upgrading:

5.2.1 MSPs' establishment and selection of actors to implement specific tasks

In order to establish an MSP for food value chain upgrading, better understanding of the social, cultural and environmental context under which the MSPs will operate is critical. A thorough value chain analysis needs to be conducted to identify value chain constraints, more stakeholder consultations are needed to identify key players in the value chain who

may also be assigned specific tasks to implement in the value chain and available opportunities that would guide the development of appropriate strategies to upgrade the chain. The results from value chain analysis would also enable MSPs facilitators such as RLDC, Oxfam Tanzania, district agricultural extension departments and NGOs to understand key factors that may hinder or enhance the performance of MSPs and design appropriate measures to address them.

Knowing potential stakeholders in a particular value chain, their competencies and the resources they have to contribute to the platforms activities is important for proper selection of MSPs members to be assigned specific tasks to lead in the innovation process. While there is no single formula of establishing a well-functioning MSP, effective engagement and participation of key value chain actors in the design process of MSPs is of paramount importance to stimulate interaction of actors, build trust among platform members and selection of platform members. The process of designing an MSP for food value chain should be participative and engaging enough. However, the establishment process of food value chain MSPs requires availability of sufficient technical and financial resources and capacities needed to support stakeholders' participation in the MSP formation process.

Development partners and any actors willing to apply MSPs in the food value chain upgrading should always ensure that the boundaries and membership composition of specific MSPs are clearly defined to enhance their engagements in the planned activities. A good sustainability plan should be developed from the beginning and be part and parcel of value chain interventions to ensure sustainability and scaling up of the value chain outcomes to achieve wider impact. At all levels of MSP operations, all key stakeholder groups should be equally and effectively represented, particularly farmers to ensure that

all issues and actions emanating from the stakeholder interaction processes are well communicated and actions taken accordingly

5.2.2 Management, coordination and facilitation of MSP processes

With regard to the management, coordination and facilitation of MSPs processes, it is imperative to establish small and manageable committees to coordinate the implementation of activities at different segments of the value chain. Members of these coordination committees should be selected based on their competencies and resources they have to contribute to the implementation of strategies needed to address specific value chain constraints.

The district agricultural and extension departments, district planners, NGOs, and other development partners willing to use MSP approach should ensure that MSP coordination committees are representative enough to ensure that all key stakeholder groups are well represented in decision making process, their voices are heard and actions are taken accordingly. They should also ensure that the membership composition of these coordination committees is guided by special competencies of individual actors required to address the constraints at different segments of the value chain.

As food value chain constraints are found along and across all segments of the value chains, the coordination committees should be established in such a way that they can operate at different levels of the value chain. An information and communication strategy should be developed by value chain support institutions such as LRDC, Oxfam Tanzania, NGOs, LGAs and others alike to enhance vertical and horizontal learning, experience sharing, dissemination of best practices and value chain outcomes as well as to enhance information flow among and between food value chain actors.

To ensure better coordination and management of MSPs activities, special interventions should be designed to allow members to meet, reflect on the implementation progress, plan and propose actions for improvement. This requires food value chain initiators, support institutions or MSPs' facilitators to ensure that there are adequate resources to support multi-stakeholder engagement processes.

5.2.3 Incentives that kept stakeholders focused and committed to MSP activities

While MSPs are often designed to address specific problems and challenges faced by stakeholders in the value chain, the provision of monetary and material incentives to platform members is important to increase the motivation and willingness of platform members to keep focus and engage in the platform activities at least during the implementation process. This is because in the MSP processes, some platform members may have direct and tangible economic benefits to accrue from their engagements while others may not.

As MSPs are voluntary structures and collaborative networks used to implement joint actions to address common problems, specific interventions aimed to stimulate participation of MSPs actors in the implementation of value chain upgrading activities should be designed from the beginning of the project by institutions supporting MSP processes to achieve the desired value chain development outcomes. These interventions should target income generation to MSP members, access to services, access to finance and loans and capacity building to enhance their competencies as well as provision of materials and operational tools required for the implementation of specific activities.

MSPs interventions integrating production issues, marketing and income generation are likely to attract the attention and participation of many MSPs stakeholders. To ensure the

sustainability and continuity of the value chain outcomes, it is very crucial for MSP support institutions to design from the beginning a proper exit strategy. The exit strategy should guide MSP members to integrate the knowledge and practices acquired through MSP processes into their individual plans and on how to sustain the value chain outcomes achieved by the platform members. The exit strategy should be put in place by MSP facilitators and be part and parcel of the value chain design and upgrading process.

5.2.4 Effects of stakeholders' engagements on the performance of MSPs

While food value chain MSPs may succeed to achieve the desired outcomes to certain levels of success, facilitators of MSPs processes such LRDC, Oxfam Tanzania, NGOs and district agricultural and extension departments and other actors in ARD should ensure that both internal and external factors that influence the performance of MSPs are well addressed to minimize their negative effects on the desired outcomes. Capacity building interventions should be designed and implemented based on needs and competencies required by platforms members to deliver quality services. As some value chain constraints and challenges may require specific policy actions, building coalition and strategic alliances with likeminded organisations and partners with similar interventions and developing a good lobby and advocacy strategy would be useful to improve policy and business environment of particular business.

Building the capacities of platforms members on specific competencies, facilitating marketing and financial linkages, exchange visits, stakeholders' workshops, meetings and other MSPs' coordination and management activities would be vital to avail competencies and resources required for successful implementation of activities that target practical solutions to value chain constraints. Enhanced competencies of MSP members would increase the capability of MSPs to mitigate institutional barriers and behavioural changes

and the capacity to address conflicts, build trust among MSP members and keep them focused on MSP business.

As the level of functioning and performance of MSPs is context specific, MSPs facilitators should ensure that the social, cultural and environmental issues together with the local institutions under which MSPs are set to operate are adequately addressed to minimise their negative impact of the performance of MSPs. The strategies aiming to improve communication and rural infrastructures should also be put in place including advocacy interventions if MSPs are set to operate in the areas where there is no access to such facilities. The location where an MSP operates has greater influence of services provision and marketing of value chain products.

To ensure that food value chain has significant contribution in improving the living conditions of farmers, it is imperative for development partners, project developers and actors in ARD to ensure that gender related activities are integrated in the value chain interventions to foster sustainability of value chain outcomes at household level. Majority of labour force in agriculture are women and youth. If these two categories of actors and their concerns are not well integrated in the programme design and implementation, there is greater likelihood for such programmes to fail to achieve the intended outcomes.

5.2.5 Factors that influenced the performance of sunflower MSPs

The findings from this study have revealed various factors that influenced the performance of sunflower value chain MSPs to achieve the development outcomes they were set to reach along the chain. These factors include both internal factors that can be easily handled by platform members and get solutions, and external factors that require interventions of third party stakeholders beyond the platforms. Before setting up an MSP

or before starting the implementation of value chain upgrading interventions, it would be very important for MSP support institutions such as LRDC and Oxfam Tanzania in the case of sunflower value chain in Dodoma Region to put in place a strategy that will guide MSPs actors to deal with the factors that have influence on the performance of MSPs set for specific food value chain upgrading.

As each value chain outcome requires special competencies and resources to achieve it, it is very crucial for value chain supporting institutions to carry out thorough investigations that will guide them in the selection of potential actors with required competencies, resources, power and influence to engage in the MSPs processes. While addressing internal factors may only require availability of technical and financial resources to support implementation of practical solutions to address them, external factors to the platforms such as improvement in institutional collaboration, policies, frameworks and attitude change would require strategic alliances and coalition building as well as comprehensive lobby and advocacy strategy to address them.

Strategic departments from the ministry responsible for agriculture, LGAs and development partners should ensure that the existing agricultural related policies, laws and frameworks are supportive enough to the development of specific value chains being promoted by actors. A comprehensive conflicts management strategy should also be developed to keep harmony among members of the platform, increase thrust and commitment of members to the platform agenda while reducing unnecessary membership dropouts from the platforms.

5.3 Relevance and Contribution of the Study to the Theory

Multi-stakeholder theories and concepts explain the dynamics and complexity of establishing and managing well-functioning multi-stakeholder platforms for food value chain upgrading. These theories also recognise that an MSP should always act as a tool to promote interactive governance and guide multiple stakeholders with diverging interests to interact in order to formulate, promote and achieve common objectives, if they are to win support from all stakeholders in the innovation process. This study has found that MSPs used for sunflower value chain upgrading in Dodoma Region were a kind of hybrid structures in nature, combining organisational-centred and social intervention-centred elements in the design and implementation processes.

While farmers, traders, input suppliers and processors had direct economic gains from the MSPs processes that could be sustained after project phase out, the benefits for those involved in services delivery such as public and private extension workers were only limited to the project intervention lifetime. Through this study, it was found that the facilitation of sunflower multi-stakeholder engagement processes was not smooth. Although stakeholder theories show that MSPs are good tools for bring together multiple actors in the food value chain to stimulate their engagement and contribution to the innovation process, it was found that facilitating MSPs processes requires more flexibility of facilitators to accommodate and address challenges that may emerge along the implementation. This is because there are so many factors which need to be handled well for a platform to perform and deliver better services to members.

This study also revealed that MSPs for food value chain cannot be designed and implemented in the same way across value chains and geographical locations. The way MSPs are formed, facilitated, coordinated and managed highly depend on the constraints

they are addressing and the local context under which they are set to operate. This implies that the context under which MSPs are set to operate has a great influence on the performance of MSPs for food value chains to achieve the desired outcomes. Additionally, it was found that an MSP may fail to achieve the desired outcomes if serious measures are not taken to address external factors such as impact of climate change.

In the study area, farmers could not reach the optimum levels of sunflower production despite the introduction of various technologies and innovations that were designed and implemented to increase sunflower production and marketing. Value chain outcomes may therefore be far less than expected or limited by adverse weather and other climatic conditions regardless of the amount of resources put in it to support MSPs processes. While stakeholder theory recognises that all stakeholders in the innovation process must be treated equally in terms of resources allocation and engagement in the innovation process, value chain support institutions or firms should treat MSP members and allocate resources based on the role of individual actors and organisations in the MSP processes and their contribution to the desired development outcomes.

Stakeholders' participation and engagement in the MSPs processes were to some extent affected by various factors related to (i) the nature and composition of MSP actors, (ii) policy, rules and business working environment related factors, (iii) facilitation and management capacities of platform members and (iv) incentives and other benefits that determined the willingness and motivation of members to join sunflower MSPs processes. Basically, the findings from this study concur with most of the literature (Dusengemungu *et al.*, 2014; Dentoni *et al.*, 2012a; Nederlof *et al.*, 2011; Tenywa *et al.*, 2011 and Hemmati, 2002) on the aspects related to the process of MSPs formation, facilitation, governance and factors influencing their performance to achieve desired outcomes.

The findings of this study provide some empirical explanation of how, MSPs can serve as tools for addressing organisational and social challenges for actors in the food value chain upgrading process, while contributing to improved living conditions of individuals particularly smallholder farmers in the innovation process. However, following the complexity and dynamics within MSP processes, value chain facilitators are argued to always promote integrated approaches that go beyond the specificity of specific value chain instead of focusing on a single aspect to achieve a broader impact and sustainability of achieved value chain outcomes.

5.4 Areas for Further Research

- i. Although the findings show that the use of MSPs to upgrade sunflower value chain interventions in Dodoma Region has yielded positive changes at household level, it is recommended to conduct further research to assess to what extent MSPs and associated stakeholder engagement processes can be sustained for longer time to improve the living conditions of majority of rural and urban communities and other actors in the innovation system in Tanzania.
- ii. It was found that the performance of sunflower multi-stakeholder platforms has contributed to improved growth of sunflower subsector and household income and access to food for smallholder households in Dodoma Region. Therefore, it is suggested that further research should be conducted to assess how the performance of MSPs influences changes in the organisational and individual behaviour and culture to adapt to new practices and rules. These studies would come up with empirical information about the relationships between the performance of MSPs and the level of adoptions and integration of best practices,

value chain upgrading strategies and innovations into individual and organisational plans for action.

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APPENDICES

Appendix 1: Household survey questionnaire used for this research

Section 1: Identification of respondent

1. **Date of interview:**
2. **Name of interviewer:**
3. **Name of respondent:**
4. **Location:** Village:..... Ward:.....
District:..... Region:.....
5. **Age of respondent :**
6. **Sex of respondent**
1= Male,
2= Female
7. **Level of education?**
1= No education at all,
2= Primary education,
3=Secondary education,
4=Technical education (Certificate and Diploma),
5= University
8. **What were your main sources of income before 2012? (Tick all that apply)**
1= Crop production
2= Animal husbandry
3= Non-farm business
4= Employee/labour
5= others specify
9. **What are your main current sources of income?**
1= Crop production
2= Animal husbandry
3= Non-farm business
4= Employee/labour
5= Others, specify
10. **Who are the members of your household (starting by the HH head if not the respondent)**

S/N	Full Name	Sex	Age		

				Relationship with the HH	Level of Education 1= No educ. 2= Primary 3=Secondary 4=Technical 5= University
1					
2					
3					
4					
5					
6					
7					
8					

Note: For members who are not currently living within the household, tick only the years when they were within the household

Section 2: Ownership and access to land for agriculture, focusing on sunflower value chain upgrading in Dodoma

11. Do you own land for agriculture?

1= Yes,

2 = No,

If yes skip question no.13

12. If yes, how did you obtain this land?

1= bought from own income

2= inherited from parents

3= obtained as gift

5= acquired by clearing the bush

6= allocated by government

7= others specify

13. If no, do you hire land for agriculture?

1 = Yes,

2 = No

14. When did you start to hire land for agriculture?

1= before engaging in the sunflower VC

2= after engaging in the sunflower VC

15. What is the total estimated land size used for the production of sunflower? (Acre)

Years	Before the	2012	2013	2014
-------	------------	------	------	------

	start of the FVC			
Land size (Acre)				

Section 3: Stakeholders’ Engagement in sunflower food value chain upgrading

16. When did you or your household start to engage in sunflower VC?

- 1= Before 2012
- 2= In 2012
- 3= In 2013
- 4= In 2014

17. How are you or your household involved in the activities regarding sunflower VC?

- 1= as individual,
- 2= through some form of organisation

18. Do stakeholders in the sunflower VC have platforms to bring them together to implement specific activities?

- 1= Yes
- 2= No

19. If yes, what are those platforms?

- 1.
- 2.
- 3.
- 4.
- 5.

20. In which platforms are you engaged in?

- 1.....
- 2.....
- 3.....
- 4.....
- 5.....

21. What are the main objectives the platforms you are involved in?

S/N	Objectives	Platforms				
		1	2	3	4	5
1						

2						
3						
4						
5						
6						
7						
8						
9						
10						

22. Who are the stakeholders of the platforms you are engaged regarding sunflower VC?

Type of stakeholder	Platform 1	Platform 2	Platform 3	Platform 4	Platform 5
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					

23. Among those stakeholders, who are involved in capacity building to strengthen your capacities?

- 1.....
- 2.....
- 3.....
- 4.....
- 5.....

24. Who are providing you financial support to promote this sunflower?

- 1.....
- 2.....
- 3.....
- 4.....
- 5.....

25. Who are providing agro-inputs and equipment aimed to promote sunflower?

- 1.....
- 2.....

- 3.....
- 4.....
- 5.....

26. Who are facilitating networking and linkages to other service providers?

- 1.....
- 2.....
- 3.....
- 4.....
- 5.....

27. Who are engaged in policy advocacy to ensure better policy environment for sunflower VC?

- 1.....
- 2.....
- 3.....
- 4.....
- 5.....

28. What are the main events that bring together stakeholders to discuss issues related to sunflower VC?

- 1.....
- 2.....
- 3.....
- 4.....
- 5.....

29. In which events are you involved?

- 1.....
- 2.....
- 3.....
- 4.....
- 5.....

30. How often do stakeholders in the platforms meet to discuss issues related to sunflower?

Platforms	Monthly	Quarterly	Semi annually	Annually	Upon circumstances
Platform 1					
Platform 2					

Platform 3					
Platform 4					
Platform 5					

31. At what level do these engagement processes take place?

- 1= Producer groups level
- 2= Village associations level
- 3= District associations level
- 4= Regional level
- 5= National level

32. What are the issues of sunflower discussed by stakeholders at producer group level?

- 1.....
- 2.....
- 3.....
- 4.....
- 5.....

33. What are the issues of sunflower discussed by stakeholders at village level?

- 1.....
- 2.....
- 3.....
- 4.....
- 5.....

34. What are the issues of sunflower discussed by stakeholders at district level?

- 1.....
- 2.....
- 3.....
- 4.....
- 5.....

35. What are the issues of sunflower discussed by stakeholders at regional level?

- 1.....
- 2.....
- 3.....
- 4.....

5.....

36. What are the issues of sunflower discussed by stakeholders at national level?

1.....

2.....

3.....

4.....

5.....

37. What are the main constraints of sunflower being addressed by actors in this sunflower VC?

1.....

2.....

3.....

4.....

5.....

38. What are the strategies used by stakeholders in this VC to address those constraints?

1.....

2.....

3.....

4.....

5.....

39. From the constraints of sunflower crop above, which ones were successfully addressed, partially addressed and not addressed at all? Tick in the appropriate box

S/N	Constraints	Successfully addressed	Partially addressed	Not addressed at all
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

40. What are the key achievements realized by actors so far as result of stakeholders' engagement in this VC?

- 1.....
- 2.....
- 3.....
- 4.....
- 5.....
- 6.....

41. What are the new developments initiatives/enterprises initiated by actors as result of stakeholders' engagement in this VC?

- 1.....
- 2.....
- 3.....
- 4.....

42. What are the main challenges related to stakeholders' participation and engagement in this VC?

- 1.....
- 2.....
- 3.....
- 4.....
- 5.....
- 6.....

43. What are the communication strategies used to share results, experience and lessons among sunflower value chain stakeholders?

-
-
-

What are the communication strategies used to share results, experience and lessons beyond sunflower value chain stakeholders?

-
-
-
-

.....

Section 4: Agricultural production and income generation

44. Change in production and income over the last three years 2012, 2013 and 2014

S/N	Assessment criteria for production and income generation	Before engagement	2012	2013	2014
1	Estimated total cost for land preparation (hiring land, farm implements and labour force) (TSH)				
2	Estimated total costs for inputs (seeds, fertilizers, weeding and pesticides) (TSH)				
3	Estimated total cost for harvesting, transportation, storage, post-harvest handling (TSH)				
4	Estimated total quantities of this crop produced annually (Kgs)				
5	Estimated total quantities of this crop sold annually to generate income (Kgs)				
6	Estimated annual income generated from sales of this crop (TSH)				

45. What are other major sources of income for your household (see question 8 and 9)?

Source 1:

Source 2:

Source 3:

Source 4:

Source 5:

46. What is the estimated total income before you engaged in the sunflower VC?

Sources of income	Source 1	Source 2	Source 3	Source 4	Source 5
Estimated total income					

47. What is the estimated total income from each of these sources over the last three years?

Sources of income	Source 1	Source 2	Source 3	Source 4	Source 5
Estimated income 2012					
Estimated income 2013					
Estimated income 2014					

Section 5: Market access and linkages

48. Who were the main buyers of sunflower produce before you engaged in the sunflower VC?

- 1 = fellow farmers in the village,
- 3= middlemen at village markets,
- 4= traders from urban markets,
- 5= processors
- 6= others specify

49. Who are the current main buyers of sunflower produce?

- 1 = fellow farmers in the village,
- 2= middlemen at village markets,
- 3= traders from urban markets,
- 4= processors
- 5= others specify

50. How were you selling sunflower produce before you engaged in the sunflower VC?

- 1= individually
- 2= collective marketing in group

51. How are you currently selling sunflower produce?

- 1= individually
- 2= collective marketing in group

52. Were you selling processed or unprocessed sunflower before you engaged in the sunflower VC?

- 1= processed produce

2= Unprocessed produce

3= processed and unprocessed produce

53. Are you currently selling processed or unprocessed sunflower?

1= processed produce

2= unprocessed produce

3= processed and unprocessed produce

54. At what price were you selling sunflower products before your engagement in the sunflower VC and now?

Selling mode	Selling price per Kg			
	Before project	2012	2013	2014
Selling individually unprocessed produce				
Selling individually processed produce				
Selling individually both processed and unprocessed produce				
Selling collectively unprocessed produce				
Selling collectively processed produce				
Selling collectively both processed and unprocessed produce				

Section 6: Access to financial services to promote sunflower VC

55. Did you acquire loans over the last three years (2012, 2013 and 2014)?

1= Yes

2= No

56. How did you get the loan?

1= own initiative,

2= linked by other VC actors

57. From which institutions did you acquire that loan?

1= Project partners

2= VICOBA

3= SACCOS

4= NGOs (e.g. FINCA, PRIDE)

5= Banks (e.g NMB, NBC, CRDB)

6= others specify

58. How much money did you get over last three years?

S/N	Access to loans	2012	2013	2014
1	Amount of loans /money accessed			

59. For what purpose do you acquire the loans?

1= Invest in the production of sunflower

2= other business

60. Did you acquire any loan to invest in the production of sunflower before you engaged in this VC?

1= yes

2= No

61. How did you get that loan?

1= own initiative,

2= linked by other people

62. From which institutions did you acquire that loan?

1= Project partners

2= VICOBA

3= SACCOS

4= NGOs (e.g. FINCA, PRIDE)

5= Banks (e.g NMB, NBC, CRDB)

6= others specify

63. How much money did you acquire from the above sources over the last three years?

S/N	Access to loans	2012	2013	2014
1	Amount of loans /money accessed			

64. How is the acquired loan amount distributed over time?

S/N	Loan distribution	Before intervention	2012	2013	2014
1	Amount of loan allocated for investment in sunflower				
2	Amount of loan allocated for other business				

65. Did you get any training on loan management?

1=Yes,

2=No

66. If yes, who provided you that training?

- 1.....
 2.....
 3.....
 4.....

67. If you did not manage to acquire a loan before engagement, why?

.....

What are the major impediments for you to access the loans?

- 1= collateral requirements
 2= high interest rates
 3= lack of education on loan management
 4= locations of credit institutions
 5= others specify

Section 7: Asset acquisition and value

68. What are the assets you have acquired before and after engagement in sunflower VC?

ID	Type of asset	Estimated costs of assets in TSH acquired or received over last three years			
		Before engagement in the VC	2012	2013	2014
1	Tractor				
2	Power tiller				
3	Modern house				
4	Water tank				
5	Plough				
6	Bicycle				
10	Motorcycle				
11	Car				
12	processing machine				
13	TV and accessories				
14	Radio				
16	Mobile phone				
17	Refrigerator				
19	Furniture				
20	Cattle				
21	Pigs				
22	Goats				

75. Which months were you largely obliged to buy additional food to complement your own produced food before you engage in this VC? (Tick the corresponding months)

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

76. Which months are you currently largely obliged to buy additional food to complement your own produced food (Tick the corresponding months)

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

77. Which months did you face severe food shortage before you engage in this VC? (Tick the corresponding months)

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

78. Which months are you currently facing severe food shortage? (Tick the corresponding months)

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

79. What is the average annual household expenditure that you incurred to cover the items below the year before you engage in this FVC?

1= Average amount spent on education:

2= Average amount spent on health/medical treatment:

3= Average amount used to buying clothes/shoes for family members:

4= Average amount used for contribution to social events:

5= Average amount used to buy food:

6= other expenses

80. What was the average household expenditure incurred on the items below over the last three years?

S/N	Items	2012	2013	2014
1	Education			
2	Health/medical treatment			
3	Clothes/shoes			
4	Social contributions			
5	Food			
11	Others expenses			

Note: The statement “*before engagement in the FVC*” applies for years other than the three years of study period, i.e. 2012, 2013 and 2014

Thank you very much for your valuable contribution to this research

Appendix 2: Checklist for key informant interviews

Section 1: Particulars of respondent

1. Name of interviewer:
2. Name of respondent:
3. Organization/stakeholder group:
4. Position:
5. Location:
6. Date of interview:

Section 2: Guiding questions

1. Provide a brief description of your organization/group, its objectives and main activities you are implementing? What are the strategies used to implement your activities?
2. In the sunflower VC upgrading, what was the role of your organization/group? What are the main activities implemented by your organisation?
3. What are the key constraints being addressed by stakeholders to upgrade sunflower value chain? What are the objectives do you want to achieve?
4. Who are the key stakeholders in the sunflower VC and how were they identified? What are the tasks of individual stakeholders in upgrading sunflower value chain?
5. How are the stakeholders organized to implement activities to upgrade sunflower VC? Are there specific Platforms with specific tasks to implement? How were they formed and how are they operating?
6. What are the major engagement processes used to bring together stakeholders to discuss issues of sunflower platform? How these stakeholders' engagement processes are organised and coordinated? At what level are they organized?

7. Is there any rule, regulations or agreements established to tie together stakeholders to the business of sunflower platforms? What are the incentives for stakeholders to remain committed and supportive to the business of the platforms?
8. How are the decisions about the platform and sunflower VC made? Who are engaged in decision making process and why?
9. From your experience, what are the factors (internal and external) that likely affected the performance sunflower platforms to achieve the objectives they were set to reach?
10. Were the objectives set to upgrade sunflower value chain achieved? To what extent were they achieved and why? Are there the objectives that were not addressed at all and why?
11. What are the main achievements have you realized as platform through sunflower VC upgrading process? Are there new development initiatives that evolved as results of stakeholders' engagement in the sunflower VC? What are they? What are the challenges and lessons related to your engagement in the sunflower VC?
12. How are the value chain outcomes (achievements, best practices and lessons) communicated to stakeholders and the public in general?

Appendix 3: Guiding questions for focus group discussions (FGDs)

1. What are the main constraints related to sunflower being addressed by stakeholders in this FVC? What are the intervention strategies used to address those constraints?
2. From the constraints indicated above, how many were successfully addressed, partially addressed and not addressed at all and why? What are the performance indicators for each constraint?
3. Who are the key stakeholders involved in this FVC and what are the main activities they are implementing to upgrade sunflower value chain?
4. What are the engagement processes used to bring together stakeholders to discuss issues related to sunflower FVC? At what level do these engagements take place and who are the stakeholders at each level? When do they meet to discuss these issues?
5. For each stakeholder's engagement level, how are activities organized and coordinated? How are the decisions made? Who has more power in decision making and why?
6. What are the key achievements realized to date that are attributed to your engagement in the sunflower value chain?
7. What are the key factors that should be considered to effectively engage multiple stakeholders in the sunflower value chain upgrading?
8. What are the social, cultural and environmental factors that are likely to affect the stakeholders' engagement in sunflower value chain at different level of organizational arrangement?

Appendix 4: Sample size determination

The sample size by Cochran's (1977) formula based on the level of precision, degree of confidence and variability of the population as expressed in the following formula

$$n = \frac{N}{1 + N(e)^2}$$

Where:

n = Sample size

N = the population size

e = the level of precision or sampling error, estimated in percentages (0.05)

According to the data in the project documents for sunflower value chain upgrading by RLDC and Oxfam Tanzania, the two initiatives intended to reach in total 48 500 households (RLDC, 2008 ; Oxfam, 2012) .Therefore, sample size calculated as follows:

$$n = \frac{N}{1 + N(e)^2}$$

$$n = 48\,500 / 1 + 48,500 (0.05)^2$$

$$n = 48\,500 / 1 + 121.20$$

$$n = 48\,500 / 121.25$$

$$n = 400$$

The sample for this study was 397 among which 251 were respondents to household survey. About 35 respondents on average were selected to participate in the household survey in each village. Bailey (1994) argues that a sample of 30 respondents bear the minimum standards for studies in which statistical data analysis is to be done regardless of the population size.