

Participation of Smallholder Farms in Modern Agricultural Value Chains: East Africa

MSc Thesis Spatial Planning
Frezer Ygzaw



September 2020

(This page is intentionally left blank)

Participation of Smallholder Farms in Modern Agricultural Value Chains: East Africa

Frezer Tekeste Ygzaw
MSc Thesis Spatial Planning
Wageningen University
September 2020

COLOPHON

Author	Frezer Tekeste Ygzaw
Student number	910528980010
Email	Frezer.tekeste@gmail.com
Course	MSc Thesis Spatial Planning (LUP80436)
Date	September 2020
Supervisor	Dr. Ir. GJ (Gerrit Jan) Carsjens Land Use Planning Chair Group
2nd Supervisor	Dr Thomas Hartmann

Landscape Architecture and Spatial Planning Group

Phone: +31 317 486187

Fax: +31 317 419000

www.lup.wur.nl

Droevendaalsesteeg 3, 6708 PB

Wageningen The Netherlands



ABSTRACT

The transformation of the agricultural system is seen as a crucial way to improve East Africa's impoverished livelihoods. But the tools used to realize this, such as modern agricultural value chains are underperforming. Most literature shows that this is due to poor smallholder farmer productivity. This is despite the focus of international and local organizations to improve smallholder farmers' productivity. So, this study aims to look into the reason behind the challenge in productivity by examining the participation of smallholder farmers in modern agricultural value chains from the perspective of land productivity and collaboration. Taking the region as a case study area qualitative study was conducted. And data was collected from experts in agriculture, agricultural value chain, spatial planning, and other relevant fields with experience in East Africa. The results show that the participation of smallholder farmers in modern agricultural value chains can improve their productivity. However, to achieve significant improvement in productivity the existing spatial organization of farmlands and collaboration systems in the modern agricultural value chains needs to change.

Keywords: smallholder farmers, modern agricultural value chains, crop productivity, East Africa, collaboration, power asymmetry, land productivity

PREFACE

Even though it is unutilized in developing countries, I believe spatial planning can help transform the rudimentary agricultural system they have. I was curious about the role of spatial planning in food production when I saw how it was used to reshape the agricultural landscape in the Netherlands. Moreover, after my internship at WMFC, I was motivated to examine how spatial planning can contribute to food security in Africa. Using this thesis as an opportunity to study the topic, I chose to focus on examining if the challenges in the collaboration of smallholder farmers and modern AVCs in East Africa is due to the land productivity or how they interact.

Throughout the time I was doing the thesis, some people supported me in one way or another. So, I would like to express my gratitude and appreciation. First of all, my supervisor Dr. Ir. Gerrit Jan Carsjens; thank you for the guidance, advice, and feedback you gave me despite the challenges and uncertainties that occurred. Secondly, from Wageningen Metropolitan Food Cluster (WMFC)¹ team, thank you for all the motivation and support you gave me. Third, to all my interviewees, especially Eric Smaling, for taking the time to answer the interviews. And last but not least, my friends who made my time in the Netherlands enjoyable.

I hope this thesis contributes to the efforts to create a food secure and less poverty-ridden world. If this thesis contributes to making a better world, even if it is as small as a drop in the ocean, I would have achieved my goal.

Enjoy.

Frezer Ygzaw

Wageningen, September 2020

¹ **WMFC**: is a spin-off of Wageningen University&Research that integrates the knowledge and life-long experience of former and current senior experts from this university and linked relevant expertise's with the fresh ideas and up-to-date education of young professionals. With a mission to help providing good food for everyone in an urbanising world. <https://www.wmfc.nl/>

ACRONYMS

AIARD: Association for International Agriculture and Rural Development

AVCs: Agricultural Value Chains

BENEFIT: The Bilateral Ethiopia Netherlands Effort for Food, Income, and Trade Partnership

CASCADE: capacity building for scaling up of evidence-based best practices in agricultural production

EAC: The East African Community is a regional intergovernmental organization of 6 Partner States: the Republics of Burundi, Kenya, Rwanda, South Sudan, the United Republic of Tanzania, and the Republic of Uganda, with its headquarters in Arusha, Tanzania.

FAO: Food and Agriculture Organization of the United Nations

GVC: Global value chains

IAIPs: Integrated Agro-Industrial Parks

IOB: Policy and Operations Evaluation Department of the Ministry of Foreign Affairs of the Netherlands

LIFDCs: Low-Income Food-Deficit Countries

NEPAD: The New Partnership for Africa's Development

REALISE: realizing sustainable agricultural livelihood security

SLM: Sustainable Land Management

SNV Ethiopia: Stichting Nederlandse Vrijwilligers (Netherlands Development Organization), Ethiopia

TNC: Transnational Corporations

UN: United Nations

UNECA: The United Nations Economic Commission for Africa

WCDI: Wageningen center for development innovation

WMFC: Wageningen Metroplotan Food Cluster

LIFDCs: Low-income food-deficit Countries

TABLE OF CONTENT

Abstract	iv
Preface	v
Acronyms	vi
Chapter One	1
1. Introduction	2
1.1. <i>Problem statement</i>	3
1.2. <i>Research objective</i>	5
1.3. <i>Reading guide</i>	5
Chapter Two	6
2. Theoretical framework	7
2.1. <i>Smallholder farmers</i>	7
2.2. <i>Modern AVCs</i>	7
2.3. <i>Sustainable land management</i>	8
2.4. <i>Collaboration and power asymmetry</i>	10
2.5. <i>Conceptual framework</i>	12
2.6. <i>Research question</i>	14
Chapter Three	15
3. Methodology	16
3.1. <i>Research design</i>	16
3.2. <i>Data collection method</i>	19
3.3. <i>Data analysis method</i>	23
3.4. <i>Quality of the research</i>	24
Chapter Four	26
4. Result	27
Chapter Five	48
5. Discussion	49
5.1. <i>Theoretical reflection</i>	49
5.2. <i>Methodological reflection</i>	53
Chapter Six	55

6. Conclusion	56
6.1. <i>Recommendations for further research</i>	57
6.2. <i>Recommendation for society</i>	58
Reference	60
Reference of literature	60
Reference of illustrations	64
Appendices	65
A. Interview protocol	40

List of figures

Fig 01: Typology of governance system in value chains. Source: Gereffii et al., 2003	12
Fig 02: conceptual framework operationalization. Source: Author, 2020	13
Fig 03: East Africa map. Source: Author, 2020	17
Fig 04: Data Analysis in Qualitative Research Source: Creswell 2014	23
Fig 05: Cereal production in Africa source: FAO, 2020	28
Fig 06: Change in food crop production source: FAO as cited in NEPAD, 2013	29
Fig 07: Ratio between high productive land and population in 2050 source: WMFC, 2019	33
Fig 08: Rural population % source: FAO as cited in NEPAD, 2013	35
Fig 09: Urban and rural populations, 2015 and 2050, for a selection of eastern African Countries. source: Ngubula, 2017	35

List of tables

Table 01: an overview of interviewees	20
Table 02: Interview questions	21
Table 03: Document analysis	23
Table 04: Cereal production1 of LIFDCs (million tonnes) source: FAO, 2020	28

A full-page background image showing a man in a dark jacket and pants, holding a long wooden staff or stick, standing in a field. He is surrounded by a massive, dense swarm of locusts that fills the entire frame, from the ground to the sky. The locusts are a yellowish-brown color and are in various stages of flight, creating a chaotic and overwhelming scene. The man appears to be struggling against the swarm. The sky is a pale, hazy blue, and the ground is covered in dry, yellowish grass.

CHAPTER ONE: INTRODUCTION

1. Introduction

Substantial studies indicate that accelerated agricultural growth is crucial to solving developmental issues such as hunger and malnutrition, food insecurity, and poverty in sub-Saharan Africa (Jayne et al., 2010). According to the World Bank (The World Bank Group, 2015), it is four times more likely for improvements in the agriculture sector to reduce poverty than any other sector. However, East Africa, an agricultural region is unable to bring this idea to fruition despite the efforts.

In East Africa, the agriculture sector is the backbone of the region's economy covering 25.7 % of the GDP in 2019 (ADB, 2019). It employs more than 50% of the population, and it is the main driver of the economic growth followed by industry (Woldemichael et al., 2017). Agriculture in this region is dominated by smallholder farmers who occupy the majority of land and produce most of the crop and livestock products. These smallholder family farms are subsistence farmers who don't have the economic, social, or political power to be resilient in the current global trends (Frank et al., 2011).

In recent years East African countries have focused more on improving agriculture considering the potential, the sector has if utilized properly. Countries such as Ethiopia, Kenya, and Uganda have identified sustainable agriculture development among the pillars of their national development strategies, and they have increased investment in the sector (Solomon et al., 2018). As a result, there have been improvements in food production and revenue from the sector (NEPAD, 2013).

To transform the agriculture sector and propel development, industrial parks have been widely adopted across Africa in recent decades (PwC, 2018). In cooperation with international organizations, policymakers in several countries in East Africa have used modern AVCs² as a tool to promote investment and export-led growth. Modern AVCs³, such as the Integrated agro-industrial parks (IAIPs)⁴ in Ethiopia has been adopted as a strategy to realize the ambitious development plan of industrialization of the manufacturing and agro-processing industries in East Africa, thereby accelerating economic transformation by attracting domestic and foreign direct investment (Bayrau et al., 2017).

Despite the efforts made on transforming agriculture in East Africa, the improvement in productivity is not satisfactory. Moreover, the result of smallholder farmer inclusive agricultural development which was expected from the implementation of modern AVCs is mixed (Solomon

² **AVCs (Agricultural Value Chains)**: are “set of actors and activities that bring a basic agriculture product from production in the field to final consumption, where at each stage value is added to the product” (FAO, 2005 as cited in FAO, 2010).

³ **Modern AVCs**: are AVCs which are characterized by vertical coordination, consolidation of the supply base, agro-industrial processing and use of standards throughout the chain (FAO, 2005 as cited in FAO, 2010). An example of modern AVC are IAIPs, agribusiness, etc.

⁴ **IAIPs**: are a geographic cluster of independent firms grouped together to gain economies of scale and positive externalities by sharing infrastructure and taking advantage of opportunities for bulk purchasing and selling, training courses and extension services (Dolayanpan, 2016).

et al., 2018). Low productivity, lack of access to markets, credit, technology, and other long-standing food security challenges of the smallholder farmers persist (Solomon et al, 2018; Salami et al., 2010).

Some previous empirical studies argued that the participation of smallholder farmers in AVCs is an important approach to improve food insecurity and welfare (Barrett et al., 2010; Mitchell et al., 2009). Other studies have indicated uncertainties in the advantage of smallholder farmers' participation in AVCs (Foster and Rosenzweig, 2010; Jyotishi, 2008). However, there are varying degrees of collaboration, and different contexts, that affect the productive integration of smallholder farmers in modern AVCs (Barrett et al., 2010; KIT, 2006). Considering that most countries in East Africa are working with different international and private organizations to further expand modern agricultural value chain systems, and the relevance of the smallholder farmers for the region, it is crucial to understand smallholder farmers' participation in modern AVCs and how it influences their land productivity.

This thesis was planned to be qualitative research using primary data from East Africa, and document analysis from specific modern AVC projects in the region. The methodology was designed to collect and analyze data from smallholder farmer representatives, local modern AVC project experts, local land management experts, and other relevant organizations in the region. However, due to the COVID-19 pandemic, the methodology was altered. And the research was conducted using primary data gathered from virtual interviews with different experts who have experience working in the region.

1.1.Problem statement

According to Brett (2003) participation is defined as “an educational and empowering process in which people, in partnership with each other and those able to assist them, identify problems and needs, mobilize resources and assume responsibility themselves to plan, manage, control and assess the individual and collective actions that they themselves decide upon” (p.5). Participation in development is also seen as an organized effort within institutions and organizations to increase stakeholder access and control over resources and related decision making that contributes to sustainable livelihoods (Kgosiemang, D. T., & Oladele, 2015).

The existing handful of empirical studies on the welfare effects of modern AVC participation have faced methodological difficulties in establishing the causal impact of modern AVCs (i.e., in determining whether the observed increase in welfare can be ascribed to participation in modern AVCs), which creates some degree of uncertainty in the benefit of participation in modern AVCs for smallholder farmers (JYOTISHI, 2008). Some of the studies such as from Foster and Rosenzweig (2010) indicate that in places where smallholder participation has taken place on a large scale modern AVCs are often subjected to routinely shed participants or collapse completely.

Foster and Rosenzweig (2010) argue that this is dependent on the adoption or Rejection of technologies by smallholder farmers.

However, the integration of smallholder farmers in modern agricultural value chains is considered an important step in improving food security and reducing poverty (Barrett et al., 2010; Mitchell et al., 2009). The participation of the smallholder farmers in the market opportunities is assumed to improve welfare and their utility (Taylor & Adelman, 2003). Therefore, the participation of smallholder farms in the modern AVC has been gaining attention with emphasis on its relevance in rural development and the reduction of poverty (Barrett et al., 2010; Barrett et al, 2012).

Smallholder farmers can participate in a modern AVC system in different ways which can be summarized as vertical integration and horizontal integration (KIT, 2006). According to KIT (2006), vertical integration is the activities farmers undertake in the modern AVC which refers to their involvement in activities such as grading, processing, transporting, and trading in the system. Whereas horizontal integration is the involvement of the farmers in the management of the chain, which can determine the conditions under which the activities farmers undertake (KIT, 2006).

Empirical literature shows a varying degree of smallholder farmers' participation in any modern AVCs; this is due to several reasons and factors that affect the participation of smallholder farmers. Some of the main factors that influence the feasibility and appeal of modern AVC participation for smallholder farmers are: farm productivity restricted by geographic or biophysical constraints, lack of access to productive assets (such as land, labor, livestock), limited availability of technology, and institutional constraints such as lack of access to credit, unsecured land tenure, and uncertainty of new risks (Barrett et al., 2010; KIT, 2006). Moreover, the horizontal integration of smallholder farmers in the modern AVC system is not performing well due to challenges such as poor cooperation and high transaction cost to participate in modern AVCs (Wiggins et al., 2010).

The challenges discussed above can be seen in the smallholder farmers' productivity and participation in modern AVCs in East Africa. Various studies show that despite the collaborations between smallholder farmers and modern AVCs in East Africa, the value chain system is underperforming. However, the literature doesn't give a detailed reason for why the collaboration between smallholder farmers and modern AVCs is not working in the region. Empirical studies don't clearly show if the problems arose either from the type of collaboration created or if the smallholder farmers' land is not capable of producing the necessary input for the modern AVCs. There is a lack of studies on the strategic and empirical analysis of these challenges in an East Africa context, which could guide policymakers and other stakeholders who are working to mitigate the challenges. Considering the gap in existing literature, this thesis examines smallholder farmers' participation in modern AVCs and how it influences their land productivity.

To answer this, the problem was examined using theories from different fields of study utilizing the interdisciplinary nature of spatial planning. The detailed discussions of the theories and concepts used can be found in chapter two.

1.2. Research objective

The main objective of this thesis is to examine smallholder farmers' participation in modern AVCs and the impact it can have on their productivity, in the context of East Africa. The societal relevance of this objective is that the results may provide input for improving the smallholder farmers' livelihood in modern agricultural value chains in east African countries. The scientific relevance is that the results contribute to the academic literature on the development of modern AVCs in the context of developing countries.

1.3. Reading guide

This report started by introducing the topic of interest with a top-down zoom into the specific problem. In chapter two the theoretical frameworks and conceptual frameworks are discussed to show the structure of the examination, and the research questions are developed based on the conceptual framework. Afterward, the methodological design of the study is presented in chapter three. Chapter four presents the results of the data gathered, while chapter five discusses and answer the sub research questions asked. Finally, chapter six answers the main research question and puts forward the recommendations.



CHAPTER TWO: THEORETICAL FRAMEWORK

2. Theoretical framework

As discussed above in chapter one, some of the main challenges for the smallholder farmers to successfully participating in modern AVCs in East Africa are geographic and biosphere constraints, and lack of productive assets such as land. Moreover, this thesis is conducted within the land use planning chair group, so the relevant theoretical focus of the study is on land and how to use it within modern AVCs. In this chapter, some background is given on smallholder farmers and modern agricultural value chains. Then, the perspective of sustainable land management (SLM) and collaboration theories are presented.

SLM and collaboration theory are selected to frame the analysis of the problem due to their potential to give a full picture of the system in the participation of smallholder farmers in modern AVCs. SLM is used to frame the study by focusing on land productivity, which is an integral component of ecosystem services. Collaboration theory is used to analyze power asymmetry and to identify the types of governance in the modern AVC system.

2.1.Smallholder farmers

According to Gollin (2014), Smallholders are defined in various literature in terms of the “land area of the farm, the number of workers, the value of output, or the value of asset holdings” (p.5). Different definitions make sense in different production systems. For instance, a definition based on the land area does not necessarily make sense for a commercial poultry or dairy farm that may produce very high values with essentially no land (Gollin, 2014). Conversely, the land measure may also overstate the ‘farm size’ of a herder. Terms like small scale, subsistent, and resource-poor farmers are also used interchangeably depending on the context and economic zone (Department of Agriculture Forestry and Fisheries, 2012). The term ‘smallholder farmer’ can be used ranging from the farmers who produce crops only for family consumption in developing countries to those in developed countries who earn as much as USD 50000 a year (Dixon et al, 2003 as cited in Salami et al, 2010). This thesis uses the term ‘smallholder farmers’ referring to the limited resource endowment of the farmers who are mainly subsistent farmers with an average of fewer than two hectares of land in east Africa.

2.2.Modern agricultural value chains (AVCs)

Depending on their focus, the activities types, and services they provide the concept of a chain can have varying names. Chains that are composed of companies or individuals that interact to supply goods and services are referred to as production chains, value chains, filières [thread], marketing chains, supply chains, or distribution chains (Webber, 2007). Even though these concepts may overlap, they all aim to identify opportunities and constraints in increasing productivity. According to Kaplinsky et al (2000), value chains refer to “the full range of activities required to bring a product or service through the different phases of production, including physical transformation, the input of various producer services, and response to consumer demand” (as cited in Webber, 2007, p.9). Value chains are seen as the vehicle by which new forms of production, technologies, logistics, labor processes, and organizational relations and networks are introduced in a system

(Trienekens, 2011). And they are increasingly recognized as a means to reduce the rural poverty prevalent in underdeveloped regions (Webber, 2007).

The ‘Value chains’ in agriculture can be defined as the “set of actors and activities that bring a basic agriculture product from production in the field to final consumption, where at each stage value is added to the product” (FAO, 2005 as cited in FAO, 2010). Agricultural value chains (AVCs) can be two types:

Traditional AVCs: which “are generally governed through spot market transactions involving a large number of small retailers and produces” (FAO, 2005 as cited in FAO, 2010); and

Modern AVCs: which “are characterized by vertical coordination, consolidation of the supply base, agro-industrial processing, and use of standards throughout the chain” (FAO, 2005 as cited in FAO, 2010).

2.3.Sustainable land management

In the past, land management has been defined as “soil management”, however, it has also referred to the management of the ecosystem, soils, rocks, and other physical geographic features (Koch et al., 2013). However, more recent approaches to land management were able to encompass the three pillars of sustainability [environmental, economic, and social] making it a more appropriate perspective, which also made it more complex (Liniger, H.P., Mekdaschi Studer, R., Hauert, C., & Gurtner, 2011).

The concept of Sustainable Land Management (SLM) can be defined as “the knowledge-based procedure that helps integrate land, water, biodiversity, and environmental management to meet rising food and fiber demands while sustaining ecosystem services and livelihoods” (Alemu, 2016, p. 503; Jakhar, Dan & Devesh, Pavan & ., Ashutosh & Kumar, 2018). This definition is not to provide a comprehensive definition of SLM for all disciplines, but rather to explain how the term is used in this thesis and give readers the intent of the study.

Sustainable land management is the foundation of sustainable agriculture and a strategic component of sustainable development and poverty alleviation. This can be seen in the argument made by Noe (2014) stating that “sustainable land management pursues to complement the often-conflicting objectives of intensified economic and social development while sustaining and intensifying the ecological roles of the land resources” (as cited in Alemu, 2016, p.503). SLM is considered an integrative strategy to address multiple human development and environmental objectives due to its strong link with issues such as food security, land productivity, and climate change mitigation among others (Woodfine, 2009).

Considering the vastness of the topic “sustainable land management” relevant key concepts will only be discussed further. Hence land productivity is the main focus in further discussion on this topic.

2.3.1. Land productivity

According to Dharmasiri et al (2012), land is “a permanent and fixed factor among other production factors such as labor and capital” (p.28). In this thesis “land” productivity is used in terms of the capacity of agricultural lands to produce biomass on a sustainable long-term basis under the constraints of each agro-ecological zone (Granat., 1999).

One aspect of land is soil, which is the critical and dynamic center of the majority ecosystem processes since it houses a large portion of the earth’s biodiversity and provides the physical substrate for most human activities. And in recent years increasing interest has been seen in improving farm productivity with higher efficiency of resource use to lower input requirement and cost (Barrios, 2007).

When talking about productivity in agriculture much of the literature from agricultural economics and development focuses on crop yields (output per unit of land) as the key measure of productivity (Dharmasiri et al, 2012). This leads to comparisons of large and small farms often relying on comparisons of the crop yields attained on farms of different sizes (Desiere & Jolliffe, 2018; Gollin, 2018). On the other hand, economists tend to think about productivity primarily in terms of output per worker, or output per unit of labor (i.e. average labor productivity), or, better still, value-added per worker (Gollin, 2018).

Increasing productivity is one of the main principles of SLM in addition to improved livelihood and improved ecosystem (Liniger, H.P., Mekdaschi Studer, R., Hauert, C., & Gurtner, 2011). It encompasses the management of land resources (soils, water, plants, and animals) for food and fiber production and ecosystem services while protecting the long-term productive potential and ecological value of these resources (Alemu, 2016; GEF, 2016; Jakhar, Dan & Devesh, Pavan & ., Ashutosh & Kumar, 2018). While targeting productive lands, good practice for SLM is assumed to have inter-dependencies with activities in “natural” landscapes through major linkages in hydrology, biodiversity, and other ecosystem services that affect productivity in agroecosystems (GEF, 2016; Woodfine, 2009).

It has been argued that to improve the food security of smallholder farmers it is necessary to close the farm’s yield gap, which is the difference between what they are actually producing and how much they could have produced if they have access to better resources and technologies (Gassner et al., 2019). Farmland size is one of the factors affecting productivity, which is argued by various scholars as to the type of impact it has on productivity. Much of the literature has focused on the so-called “inverse relationship” between farm size and land productivity (typically measured as physical output per unit of land, which is more simply termed “crop yield”), but current evidence challenges this fact (Desiere & Jolliffe, 2018; Gourlay et al., 2017). The global pattern that can be observed with regards to farm size is that it is larger in richer and upper-middle-income countries compared to lower-income countries. Moreover, the gap in farm size has been increasing since the farm size has been growing in rich countries and shrinking in poor countries (Lowder et al., 2016).

To examine and improve productivity in agriculture, spatial analysis can be used to highlight the structure and problems of production relations based on which appropriate policies can be suggested by policymakers (Dharmasiri et al (2012). Dharmasiri et al (2012) state productivity can be generally considered from two directions: “productivity of land” and “productivity of infrastructure engaged in agriculture”; and productivity of land is closely linked with the productivity of the infrastructure. Another study that argues for using spatial patterns to examine productivity in agricultural land is Wood et al (2016). The study argues that the condition under which agriculture is practiced is spatially diverse even in a single country. And they preset “crop production” of the land and the “cropland area” as a means to identify the productivity of the land which are selected to be used in this thesis.

2.4.Collaboration and power asymmetry

The word collaboration is derived from Latin meaning “to work together” thus can be seen as a process of shared activities. Collaboration is defined by Camarinha-matos (2010) as “the process in which entities share information, resources, and responsibilities to jointly plan, implement, and evaluate a program of activities to achieve a common goal” (p.311). This implies sharing resources, responsibility, and success or failure depending on the outcome of the collaboration. And according to Cao & Lumineau (2015), and Whipple, Lynch & Nyaga (2010) collaboration is associated with relational governance which can be achieved through trust, transparency, and shared knowledge (as cited in Brito & Miguel, 2017). However, in practice collaboration is a difficult process and depends on several requirements such as joint purpose, shared responsibility, and shared resources to achieve it (Camarinha-matos, 2010). Moreover, the “sharing” among the participants doesn’t always imply equality in the amount shared; participants can have different levels of involvement and roles depending on the amount they shared. This difference in the role of actors which manifests in terms of power asymmetry and how it influences the governance within a collaboration was seen by some scholars such as Gereffi et al (2005), Carlsson et al (2005), and Brisbois et al (2016).

Carlsson and Berkes (2005) argue that collaboration is a specific approach to governance involving responsibility and power-sharing between actors (as cited in Brisbois et al, 2016). This collaboration can be affected by various variables some of which are the power and resource actors have (Brisbois et al, 2016). An imbalance in the power between actors will influence the effectiveness of the collaboration process (Brisbois et al, 2016). This imbalance in power can be seen as power asymmetry which is defined by Goodwin et al (1993) as the relationship between two individuals where one has control over the outcome but the other not. Further arguments about the effect of power asymmetry in collaboration by Brito & Miguel (2017) states that “power asymmetry has implication in the distribution of value created, and therefore, it is not plausible to expect that collaborative relationship provides balanced gain to all participants” (p.61).

One study that looked into the governance aspect of collaboration and power asymmetry was by Gereffi et al (2005) in their publication “the governance of global value chains”. The paper discusses the governance patterns in global value chains and generates five types of governance in value chains. The five governance types are hierarchy, captive, relational, modular, and market;

which range from high to low levels of explicit coordination and power asymmetry (Gerefii et al, 2005). Moreover, the interaction between actors ranges from arm's length relationship in market governance to direct ownership of the production process in hierarchical governance (Gerefii et al, 2005). These five typologies of value chain governance are characterized as follow:

1. Market governance:

Market governance has a relatively simple transaction and it is characterized by arm's length exchange which requires little cooperation between stakeholders. Another essential point here is the low cost of switching to a new partner.

2. Modular governance:

Modular governance takes place “when complex transactions are relatively easy to codify” (p. 84). Typically, suppliers in modular chains make products to a customer's specifications. The relationships among the actors are more substantial than the market governance due to high information flow in the linkage.

3. Relational governance:

Relational governance “occurs when buyers and sellers rely on complex information that is not easily transmitted or learned, and where quick adaptation may be required” (p. 84). This type of governance is practiced in value chains where uncertainties and changes are a constant factor. This system has a close working partnership with suppliers play an important role in the transactions. Considering that relational linkage takes a long time to build, the costs and challenges to change to a new partner tend to be high.

4. Captive governance:

In this system, small suppliers are dependent on a few buyers who often have bigger power than them. “Such networks feature a high degree of monitoring and control by the lead firm” (p. 84). Since “the core activity of these lead firms tends to be in areas outside of production, helping their suppliers to upgrade their production capabilities does not encroach on their core agenda” (p. 84).

5. Hierarchical governance:

Hierarchical governance describes “chains that are characterized by vertical integration and managerial control within a set of lead firms that develops and manufactures products in-house” (p. 84). This usually occurs when product specifications “cannot be codified, products are complex, or highly competent suppliers cannot be found” (p. 84). This structure provides regular employment, guarantee quality, and build producer capacity.

The five types of value chain governance and how their system functions are illustrated in figure 01 below which is adopted from Gerefii (2003).

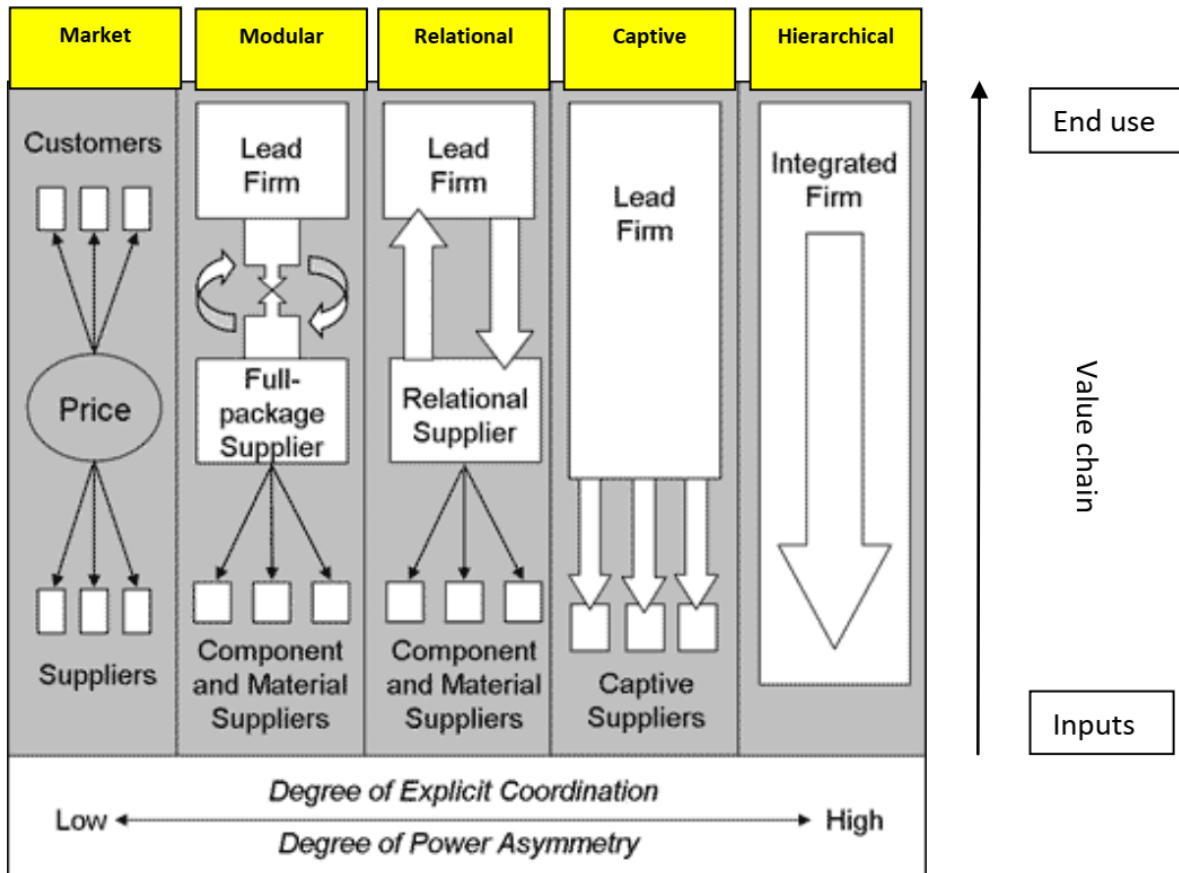


Figure 01: typology of governance system in value chains. Source: Gereffi et al., 2003

2.5. Conceptual framework

Conceptual framework as defined by Camp (2001) is a structure the researcher believes can best explain the natural process of the problem to be studied (as cited in (Smid, 2018)). In this section, the two concepts presented in the theoretical framework are operationalized.

In this thesis, the concept of collaboration is based on the study by Gereffi G., Humphrey J., and Sturgeon T. (2005) which was discussed above. The variables selected from the publication are “Degree of explicit coordination” and “Degree of power asymmetry”. They discuss the degree of explicit coordination and degree of power asymmetry among stakeholders which range from high to low within the five types of governance they presented. Using these two variables the type of collaboration between smallholder farmers and the industries in the modern AVCs in east African was examined. The degree of power asymmetry was analyzed using inquiries about the bargaining power of actors in the modern AVCs; while the degree of explicit coordination was analyzed by examining how the stakeholders interact in the modern AVCs. Using these variables, the type of governance in the agricultural value chains and how that impacts the productivity of the smallholder farmers were explored.

The second concept here is agricultural land productivity, which was examined using variables adopted from Wood et al (2016). In their publication “spatial patterns of agricultural productivity”, they present two variables that can be used to measure productivity, which is “crop production” and the “cropland area”. Cropland area is the preferred variable since “it implicitly introduces some accounting for land quality” (Wood et al 2016, p.116) which was used to show the condition of the farmland. These variables are used to show if the smallholder farmers are producing below or above the capacity of the agricultural land. Moreover, the cropland area was used to indicate the impacts the land has on the crop yield. The model shown in figure 02 below is used to illustrate the process.

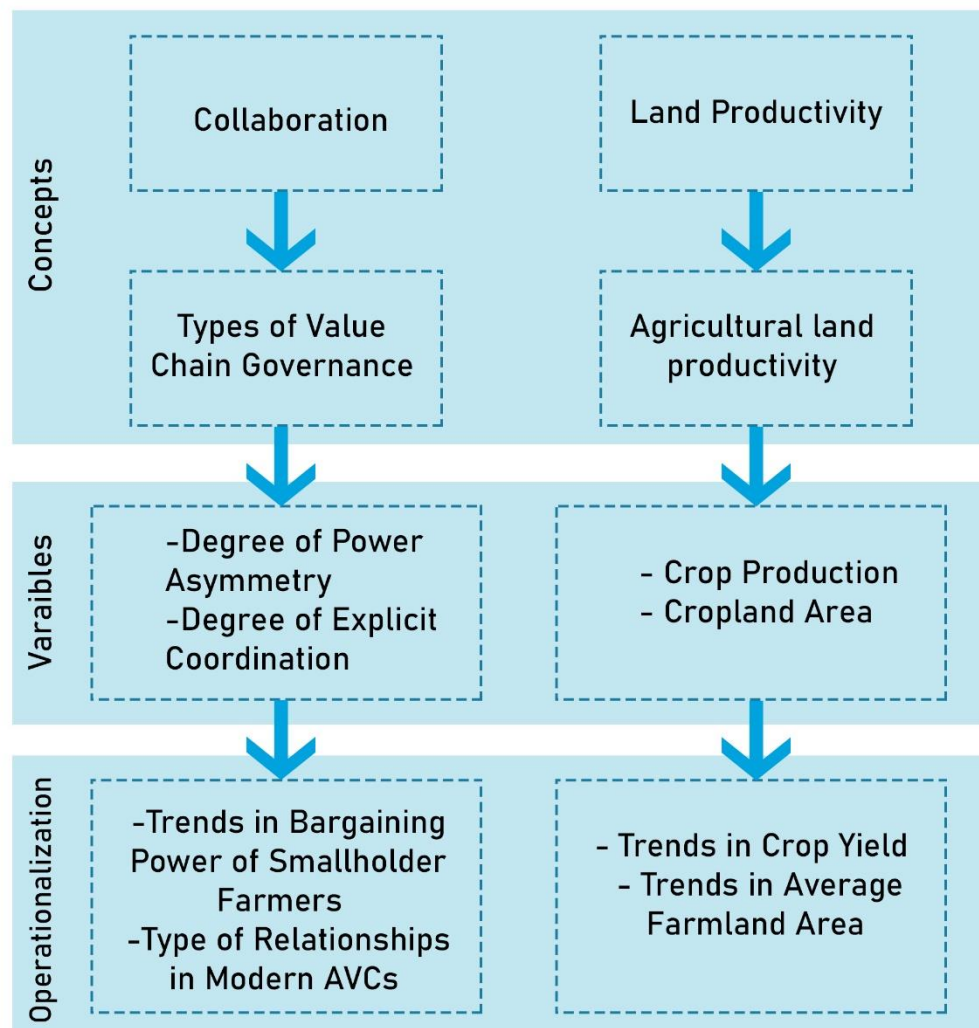


Fig 02: conceptual framework operationalization. Source: Author, 2020

2.6. Research question

Based on the theoretical framework discussed in the previous chapter the main research question was framed using both land productivity and value chain governance as follow:

How is the participation of smallholder farmers in modern AVCs in East Africa influencing their land productivity?

From the main research question, the following sub-questions are used:

- What is the impact of the collaboration of smallholder farms in modern AVCs in East Africa on their cropland productivity?

This question was used to analyze the impact of collaborating in modern AVCs on their productivity.

- What is the bargaining power of smallholder farmers in modern AVCs in East Africa?

This question was used to analyze the types of value chain governance in modern AVCs that currently exist in the region and the power asymmetry and coordination in these modern AVCs.

A photograph of a cornfield where the soil is severely cracked and dry, indicating a drought. The corn plants are green but appear stressed. The sky is bright blue with scattered white clouds. A white rectangular box is overlaid on the upper part of the image, containing the chapter title in dark blue text.

CHAPTER THREE: METHODOLOGY

3. Methodology

In this chapter, the methodology used to answer the research questions is presented. The case study approach used is discussed in the first part. Then, relevant information about the selected case study area is presented. Moreover, the existing context of modern AVC and smallholder farmers in East Africa is discussed. The data collection method which was highly impacted by the current global pandemic is explained to give an overview of the data source. The data analysis method section shows how the collected data was analyzed and the approaches and tools used to analyze it. Finally, the strategies used to improve the reliability of the study are presented.

3.1. Research design – Case study

Qualitative research design is selected for this study which indicates the philosophical worldview as “social constructivism” (Creswell, 2014; Kumar., 2019). According to Kumar (2014), the primary concern of the qualitative type of research design is to describe, investigate, and explain the condition, perspectives, behavior, and meanings as well as experiences of a group of societies. Moreover, qualitative research is characterized in two ways (Smid, 2018): first, it is “carried out in the natural setting of the arrangement” (p. 23) which means there is a direct contact between the researcher and the object of study through a case study, interview and observation; and second, “the researcher plays a key role” (p. 23) and has to be reflexive throughout the process.

Based on the above argument the qualitative research design that was used in this study is a case study. Case study as discussed by Yin (2003) should be used when “you want to cover contextual conditions because you believe they are relevant to the phenomenon under study or boundaries are not clear between the phenomenon and context” (Yin., 2014). Flyvbjerg also defines case study research as “an intensive analysis of an individual unit (as a person or community) stressing developmental factors in relation to environment” (Flyvbjerg, 2011, p.301).

3.1.1. Case Selection

Cases in a qualitative research design must be purposefully selected because they must result in an answer to the questions asked (Creswell, 2014). Therefore, the selected case is the outcome of reasoning from the problem statement, research question, and other situations that facilitate or hinder conducting the study.

Initially, Ethiopia, Kenya, and Uganda were selected as a sample from East Africa. And from each country, one relevant modern AVC project was selected for detailed data collection and examination. However, due to the COVID-19 pandemic traveling to the region was not possible. Moreover, the efforts made to contact stakeholders, and collect data from those areas were not successful due to the limited internet access in the region. So, the case area boundary was zoomed out to fully cover the East Africa region. This enabled the study to explore a wide variety of modern AVC projects in the region.

The geographic boundary that is selected as a case for this study encompasses the 11 countries located in East Africa countries which are Burundi, Djibouti, Eritrea, Ethiopia, Kenya, Rwanda,

Somalia, South Sudan, Sudan, Tanzania, Uganda. From within these countries, relevant modern agricultural value chain projects are discussed to a varying degree by the respondents.

East Africa

East Africa is an umbrella term that comprises 11 countries with multiple climate zones, 315m people, hundreds of ethnic groups covering around 3.8m square kilometer. Due to its geostrategic location for global issues, it is one of the most politically dynamic regions and this volatility is not likely to change in the near future (ADB, 2019; Africa, 2017). The region had to weather changes in the global context while struggling with local and regional political conflicts and economic challenges. Moreover, similar to the rest of Africa agriculture in the region is characterized by struggling growth, low productivity, unstable terms of trade, and aggravating environmental problems (Salami et al., 2010).

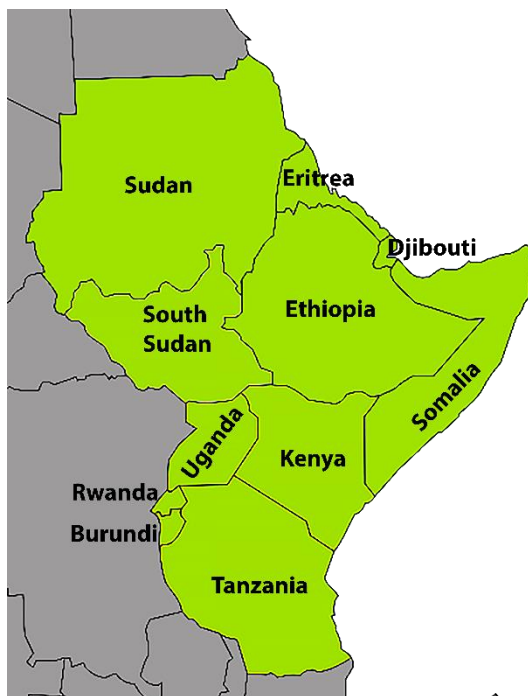


Fig 03: East Africa map. Source: Author, 2020

Numerous trends hold throughout the region such as poor domestic resource mobilization, agriculture-based economy [with a varying contribution to each countries' GDP], climate change, high population growth rate, rapid urbanization, poverty, and food insecurity are some of them (Africa, 2017). In recent years global development models have shown considerable development in Ethiopia and Rwanda, and to a lesser extent in Tanzania and Uganda; which lauded these countries globally for the reduction of poverty in the region. However, these development models don't show the full picture of the situation within these countries. Most of the major developments are concentrated in urban areas mainly big cities while the periphery rural areas remain in relatively the same state of development and this trend is not expected to change quickly (ADB, 2019; Africa, 2017). This trend can be seen in the income inequality which is prevalent in the region with a regional average of 48.4% income

going to the richest 20%, and 30% going to the richest 10%; while only 6% of income goes to the poorest 20%, and only 2.3% going to the poorest 10% (ADB, 2019). Despite all these challenges, the region is bestowed with diverse and vast natural resources, cheap manpower, and unutilized trade opportunities which shows the positive prospect for sustained economic growth in the region.

Private, international, and local organizations have been working on utilizing the vast potential in the region through policies, projects, and investments in various sectors while focusing on the agriculture sector as the main driver for development. The center of these approaches aimed at reducing poverty and improving food insecurity in the region are the smallholder farmers who comprise around 70% of the population in most of the countries. Organizations such as FAO,

UNIDO, and Bill & Melinda Gates Foundation are working in cooperation with the countries in the region to improve the productivity of smallholder farmers.

To improve the agricultural productivity of smallholder farmers in the region, countries have adopted innovations and technologies which they have been implementing throughout this decade. One of these adopted systems in the modern agricultural value chain which is implemented in some of the countries in the region. The detailed discussion about the smallholder farmers and modern agricultural value chains in East Africa are below:

Smallholder farmers in East Africa

Smallholder farmers are one of the main drivers of the economy in most countries in East Africa, despite their underutilized potential. Even though the farmland size is small it does not overshadow their importance in the region. They are not only the biggest source of employment in the region they are also the main source of food in the region; However, the food they produce is consumed within the smallholder farmers' households (Gollin, 2014). Other important characteristics of these farmers is that their simple production system, equipped with outdated technology, and high seasonal labor fluctuation and women play a vital role in the production (Department of Agriculture Forestry and Fisheries, 2012).

Although smallholder farmers in East Africa depend on their agricultural production for their livelihood, it is also recognized that some use non-farm activities to supplement their income (Barrett et al, 2001 as cited in Salami et al, 2010). Moreover, recent literature shows that developments of modern AVCs in East Africa use the agricultural activities of the smallholder farmers as one of the engines that can drive growth.

Modern AVCs in East Africa

In East Africa similar to the rest of Africa, recent developments of local and regional agro-processing value chains demonstrate the potential for significant growth in modern AVCs (UNECA, 2015). Moreover, it is an opportunity for consumers and producers particularly smallholder farmers through inclusive poverty reduction and increased food security. Considering the dynamic environmental, social, political, and economic character in east Africa, well-utilized modern AVCs can provide stable access to a market for the smallholder farmers, improve productivity and access to foods in the region, and they can boost the capacity of the region to effectively respond to emergency food assistant which is a recurring issue. However, the modern AVC developments in East Africa are facing a plethora of challenges in providing the expected outcome they can have in the agriculture sector (Trienekens, 2011).

There is great diversity in the type of modern AVCs between the countries and within each country in the study area. The diversity in the modern AVCs depends on the type of crop, the market, the type of industries, and other specific focuses they have. Moreover, the existing literature shows that there is a difference in performance between modern AVCs depending on the type of crop. To prevent these diversities of modern AVCs from hindering the study, a holistic approach was taken. The holistic approach of looking at the modern AVCs as a system enabled the study to examine them at a regional level. Furthermore, instead of examining the types of crops produced within the

modern AVCs, the trend in crop production was used. These choices enabled the study to examine how the participation of the smallholder farmers in modern AVCs can affect their land productivity at a regional level.

3.2.Data collection method

In this study, both primary and secondary data were collected from two sources. While the primary data was collected from an in-depth interview, the secondary data was collected from document analysis.

3.2.1. In-depth interview

The main source of data for this study is an in-depth interview which is used in qualitative research when a “researcher is interested in collecting ‘facts’, or gaining insights into or understanding of opinions, attitudes, experiences, processes, behaviors, or predictions.” (Rowley, 2012, p.261 as cited in Smid, 2018).

The choice of respondents for the interviews is based on “their information affluence of the selected case and is based on their willingness to contribute to the research objective” (Lawrence A. Palinkas et al., 2017, p.2). The selection of the interviewees is based on a purposive sampling technique which is driven by the limitation of access to data and time. Purposeful sampling is a technique widely used in “qualitative research for the identification and selection of information-rich cases for the most effective use of limited resources” (Patton, 2002 as cited in (Lawrence A. Palinkas et al., 2017, p.2). The purpose of using this sampling approach is to maximize the validity and efficiency of the thesis. However, some experts such as (Tongco, 2007) argue that using purposeful sampling has a risk of being biased. To counter this risk Tongco (2007) suggests that data collected using purposeful sampling can be scientifically valid if the possible bias is clearly stated and the results are not generalized to a larger sample.

During the process of conducting this study, the data collection method was significantly altered due to external influence which was beyond my control. The original data collection method was aimed at collecting data from smallholder farmer representatives, local modern AVC project experts, local land management experts, and other relevant organizations in the region. But the COVID-19 pandemic instigated quarantine started, and international travels were restricted. This happened at the data collection stage of the study, which led to rewriting most of the paper, redesign the data collection method, and redevelop the questionnaires.

At the first stage of the readjustments, there were attempts to contact the originally selected stakeholders via email, WhatsApp, and other social media. But the poor internet infrastructure coupled with the chaos the pandemic was creating made it difficult to reach them. So, new stakeholders were selected for the interview based on newly developed criteria. The main criteria were the relevance of their expertise and their experience with the context in the study area.

However, searching and contacting experts took a long time and multiple email exchanges. From the experts contacted 4 experts from East Africa and 7 experts from other parts of the world participated in the interview. This is less than 10% of experts contacted from East Africa, and around 40% of experts contacted globally. While most of the non-participants didn't reply to the request others replied stating that they are going through an adjustment period in their life due to the pandemic. Overall, the situations discussed have impacted the study tremendously, and the limitations due to this impact are discussed in Chapter Five under methodological reflection.

The selected interviewees in this thesis are experts from Wageningen University and Research who have worked on scientific studies in East Africa countries, experts who have first-hand experience in the development of modern AVCs in East Africa, experts from the local or international organizations who are working in the modern AVCs in the region, and other experts who have extensive knowledge, experience, and contextual understanding in the topic that is being examined. The specific criteria for selecting interviewees were categorized as agriculture, value chain, spatial planning, and other closely related fields of expertise. The aim was to have an even distribution of interviewees from each expertise. But majority respondents were from the agriculture sector and value chain; due to the disconnect between spatial planning and rural agriculture in East Africa, and the limited access to spatial planners with experience in the region the spatial planner interviewee is limited. The spatial planners I managed to contact from the region were unable to give any insight into the agriculture sector or the modern AVCs.

The number of interviewees is determined by the willingness of the respondents and the focus is on collecting representative data. When conducting these interviews, the snowballing approach was used to get additional relevant interviews by asking the selected interviewees for other experts that could be relevant for the study. However only 11 relevant interviews were conducted, and the detailed information about the interviewees is presented in the table below. All interviewees were willing for a second interview, and four of them were contacted for a short discussion.

Table 01: an overview of interviewees

Expertise	Interviewee Position	Location	Interview date
Agriculture expert	Researcher/co-runs a program	WCDI	April 13, 2020
Agriculture expert	Advisor	WCDI	April 16, 2020
AVC expert	Coordinator	WCDI	April 17, 2020
Agriculture expert	Program coordinator	WCDI	April 20, 2020
AVC expert	Researcher	Wageningen University	April 30, 2020
Agricultural expert	scaling and planning expert	Addis Ababa university	May 7, 2020
Agricultural expert	Researcher	Wageningen University	May 17, 2020

Agriculture expert	project manager	SNV Ethiopia	May 18, 2020
AVC expert	Researcher	Wageningen University	June 2, 2020
Agricultural economist	Researcher	German Development Institute	July 9, 2020
AVC expert	Network coordinator	AgriProFocus	July 22, 2020

NB: *The categories of experts is generalized to facilitate the presentation of this overview. It should be noted that some interviewees have multiple expertise within and out of the ones listed in the table.*

For this study, a semi-structured interview format was used “to creates more space for the researcher to explore interesting aspects that might pop up during interviews” (Smid, 2018, p.14). The questions presented to gather the data are a blend of open-ended and close-ended, and some have a follow-up question. The open-ended questions enabled the respondents to give their answers in a narrative manner with specific examples of their experience.

The interview protocol was developed and the questions were categorized into two sections. The first section is composed of four introductory questions to make sure the terms and contexts explained by the interviewer are understood by the interviewee. And, the second section had nine general semi-structured questions to guide the discussion. The detailed structure of the interview protocol can be seen in the Appendices Chapter part A.

The interview questions were created by operationalizing the concepts of land productivity, and collaboration which is discussed in detail in Chapter Two. The interview questions developed are listed in Table 02.

Table 02: Interview questions

CONCEPTS	VARIABLES	MAIN INTERVIEW QUESTION
Land productivity	Crop production	what is the trend in smallholder farmers’ crop productivity in East Africa?
		What is the trend in smallholder farmers’ farmland size in East Africa?
	Cropland area	What implications does the spatial organization of the smallholder farmers’ farmland have on their productivity?
		How do you see the relationship between smallholder farmers’ farmland size and crop productivity?
Collaboration	Degree of power asymmetry	What do you think are the main challenges hindering smallholder farmers from increasing their crop production in East Africa?
		Who manages agricultural value chains in East Africa?
		How do you see the influence of industries [buyers, processor, or exporters] on the smallholder farmers' crop productivity in East Africa?

	Degree of explicit coordination	How do smallholder farmers and the industries in the value chain system interact in the region?
		Do smallholder farmers in East Africa have bargaining power in the agricultural value chains?

As explained above due to the global corona pandemic the interviews could not be conducted face to face. Instead, the interviews were conducted using the internet and phone calls. According to James & Busher (2016), “Online interviews can be conducted asynchronously (in non-real-time) and synchronously (in real-time) and involve audio, textual as well as video/visual exchanges” (p.3). The method that was used in conducting interviews for this study was synchronously using skype and phone calls. This enabled the author to create an environment similar to face-to-face interviews, ask follow-up questions in real-time, and steer the direction of the interview when necessary. During these interviews permission to record the conversations was asked, and based on the response it was coupled with real-time handwritten notes.

3.2.2. Document analysis

Originally the document analysis was planned to be conducted in a systematic way using documents from the three modern AVC projects selected as a case. Documents from relevant organizations and scientific papers were also selected based on the theoretical framework used to conduct this study. However, after the changes that were made due to the pandemic the document analysis was limited to relevant scientific papers and reports to triangulate findings. However, finding documents that are up to date, and that is based on a regional study of East Africa was difficult. To mitigate this challenge publications that studied Sub-Saharan Africa were used. Furthermore, the choice to use a document was highly influenced by their accessibility online.

The document analysis was used to reinforce and fill the data gaps in the data collected during the interviews. Relevant documents were used in the document analysis to corroborate the findings from the interviews in the result chapter. The main focus of the document analysis is to improve the reliability of the study by triangulating the data from the interviews. Moreover, it was used to strengthen the discussion and conclusion made by the author. The documents analyzed are scientific papers and published reports which are relevant to the topic being examined and the case study area. the keywords used to search for the documents were modern AVC, East Africa, smallholder farmers, cropland area, and crop production. The key documents analyzed can be seen in Table 03 below.

Table 03: Document analysis

Title	Author	Date of publication
Countries in need of external assistance of food	FAO	2020
Agriculture in Africa transformation and outlook	NEPAD	2013
Global Value Chains and Agribusiness in Africa: Upgrading or Capturing Smallholder Production?	Kojo S. Amanor	2019
The economic lives of smallholder farmers	FAO	2015
Smallholder Agriculture in East Africa: Trends, Constraints and Opportunities	Salami et al	2010

3.3.Data analysis method

As defined by LeCompte and Schensul (1999) analysis is the process a researcher uses to reduce data to a story and its interpretation (as cited in (Kawulich, 2004). Through this process, the large amount of data gathered is reduced to make sense. For this to happen analysis of data requires several steps that have to be taken for the proper utilization (Creswell, 2014). The process described by Creswell (2014) is iterative, rather than a linear outline. The detailed representation of the data analysis process which is adopted from Creswell is presented in figure 04.

Except for two interviews, where short hand note had to be taken all other interviews were recorded using a Skype call recorder. The interviews varied in length from the shortest being 45 minutes to the longest 90 minutes. The data collected through the interview recording was transcribed and coded digitally using digital programs inqScribe and MS Word. Word by word transcribing method was used to capture not only the data but also how it was presented. The transcription was done using inqScribe, a program that has an interface to listen and write simultaneously. However, off-topic or repetitive sentences were not included in the transcription.

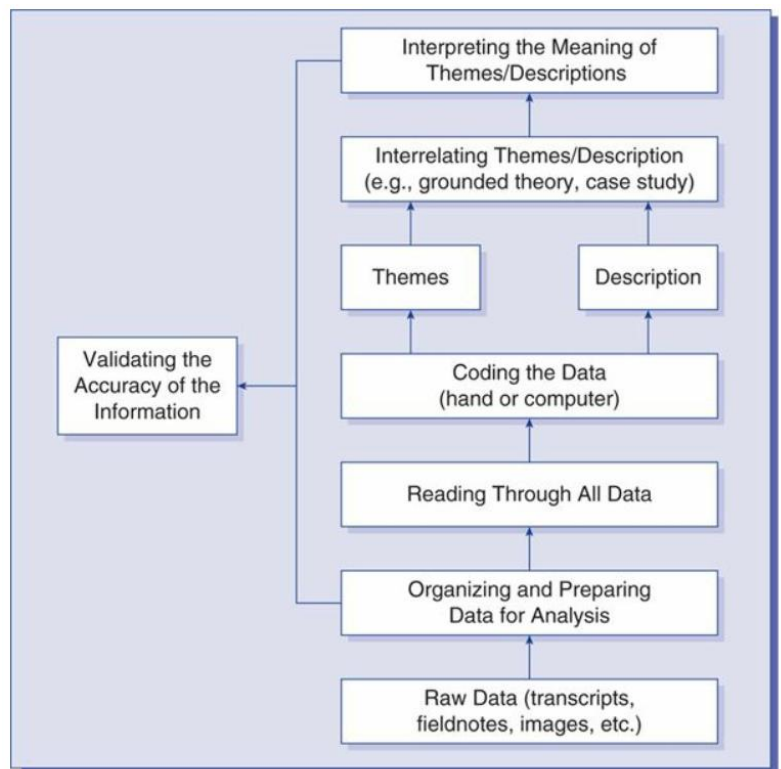


Fig 04: Data Analysis in Qualitative Research Source: Creswell 2014

Before starting to code the transcripts, general themes were developed from the conceptual framework to guide the process. Then the transcribed interviews were reread and coded into the general thematic categories. Different colors were assigned to each general theme using the “text highlight color” tool in MS Word. And when there was a new finding that could not be categorized into the existing conceptual framework-based themes, it was highlighted and a note was taken to indicate the potential category. When coding a transcript ended the notes about the potential categories were compared with other transcripts. After which new codes were created by merging similar findings.

After coding was complete the result was categorized into nine general finds. These general findings were developed to present the central themes of the results. Moreover, it enabled the author to combine the narratives from the respondents into each central theme.

3.4. Quality of the research

Due to the diverse philosophical paradigms, the qualitative research approach has its quality, and how to assess this quality has been argued about. Chowdhury (2015) highlights that recently the most agreed-upon way to determine the quality of qualitative research is “trustworthiness”. The range of indicators that have been drawn to assess the “trustworthiness” are credibility, transferability, dependability, and confirmability (Chowdhury, 2015).

Credibility: Shenton (2004) defines credibility as “the accuracy of research findings where investigators attempt to demonstrate that a true picture of the phenomenon under scrutiny is being presented” (p.63). One of the ways widely discussed as a procedure to improve credibility is triangulation. This study incorporates data triangulation using primary data from multiple source interviews and secondary data using document analysis.

Transferability: considering it might not be possible to apply generalizability in qualitative research transferability is used. Transferability is about how the research outcomes can be transferred in another context. Shenton (2004) describes transferability as “they provide sufficient detail of the context of the fieldwork for a reader to be able to decide whether the prevailing environment is similar to another situation with which he or she is familiar and whether the findings can justifiably be applied to the other setting” (p.63). To improve the transferability in this study, the same in-depth interview questions are used for all respondents in all the cases. To achieve this interview protocol is developed which can be seen in the annex. Moreover, background information about the context of the study is provided which will allow comparisons to be made.

Dependability: this refers to the consistency of the research. According to Shenton (2004), “if the work were repeated, in the same context, with the same methods, and with the same participants, similar results would be obtained” (p.71) thus the study has dependability. To achieve this the

detailed procedures used and data collected and approaches taken will be organized and documented.

Confirmability: another major aspect of quality in research is objectivity which is difficult to achieve in qualitative research. Thus, confirmability is used in qualitative research to manage findings that emerge from data not from the researcher's predisposition (Shenton, 2004). To improve the confirmability of this study investigator's bias will be reduced through triangulation of data, and admission of beliefs and assumptions.

Respondent feedback: to mitigate the occurrence of biased interpretation or misunderstanding all the transcribed interviews were sent to the respondents. After which the feedback given was incorporated into the transcriptions. So, all the data used in the result presentation are approved by the interviewees.

Ethical consideration: in all interviews, the permission of the respondents is asked to digitally record the conversation. Moreover, the parts of conversations they don't want to be recorded are removed. The respondents are also asked about disclosing their personal information. During the interviews, two respondents didn't want to be recorded or their identity to be public. Based on which it was decided to use codes for all respondents.

An aerial photograph of a city landscape. In the foreground, a paved road with white lane markings runs diagonally. To the left of the road is a grassy area with some low-lying vegetation. Further back, there's a red structure that looks like a gate or entrance. In the background, a city skyline is visible under a hazy sky, with mountains in the distance. A semi-transparent white box with the text 'CHAPTER FOUR: RESULTS' is overlaid on the right side of the image.

CHAPTER FOUR: RESULTS

4. Results

This chapter presents the findings from the eleven interviews conducted. Efforts have been made to present the findings comprehensively. Since the interviews are semi-structured, to present the data nine major statements are made. These nine findings comprise results from one or more interview question(s) and respondents. And they are presented in a narrative format that contains direct quotes from the respondents. Table 02 shows the list of general findings.

4.1. Despite the increasing crop productivity, the level of food production in East Africa is unable to meet current and future food demands.

From the interview questions “what is the trend in smallholder farmers’ crop productivity in East Africa?” it was found that smallholder farmers’ productivity has increased compared to the past production level but the system can’t meet current and future food demand in the region. The general trend in crop productivity was discussed with all interviewees, and the same answer was given by them in one form or another.

From this, it can be summarized that there is a positive change in the crop production of smallholder farmers in East Africa throughout the past few decades. However, the level of this improvement differs in each country and the sector within that specific country. Moreover, this increasing crop productivity is not meeting the current food demand in the region and the food shortage is expected to persist throughout the near future. FAO (2015) report reinforces this stating “smallholder productivity increases over time but at a rate slower than that of larger farmers” (FAO, 2015, p. 33). These ideas were discussed by the interviewees in various ways with different illustrating cases used as an example from different countries in the region. Except for two interviewees who said they don’t have detailed knowledge in the crop production trends in the region the rest ten interviewees gave an elaborated answer.

One of the interviewees, an agricultural economist who is a researcher in the German Development Institute, indicated the increasing crop production in East Africa throughout the past decades saying “due to improved inputs like fertilizer and subsidy on sectors such as maize production, I would say it [crop production] has definitely improved compared to where it was before, let's say, 10, 15 years”. This improved crop yield can be seen as attributed to various reasons. All 10 interviewees gave different examples as to why crop production is increasing but the main factors behind it remain the same. Extension programs funded by local and international organizations, relatively better inputs in the form of technology, quality seeds, fertilizer, and market access are some of the main reasons they gave. For example, an interviewee who is an advisor at the WCDI, discussed the increasing improved input use in Ethiopia by stating “IOB did a case study on a number of Netherlands’ food security program and found that in Ethiopia the use of quality seed increased by I think it's around 30 percent or something like that over a period of two years”, and this was able to increase the crop yield in the country. Another example given by an interviewee was rice production in Tanzania. He explained rice production has greatly improved in the country to a point where they have significantly reduced importing it which is due to the “improved varieties in the country and also programs to support rice production”.

However, it has to be clear that the increased crop yield is relative to the past production of the smallholder farmers in the region. If we look at crop production compared to the amount of food demand in the region, there is still a significant yield gap. This can be seen in the answers given by the interviewees, who all agreed that the production is not able to meet demand. Moreover, the rate of productivity in the region is also lower compared to other parts of the world. This was highlighted by an interviewee who said after looking into the data from different global and local [East Africa] reports, “although productivity is increasing in Eastern Africa it still lags significantly behind the average increase in other regions of the world”.

This argument correlates with the FAO’s March 2020 report on countries in need of external assistance of food, and NEPAD’S 2013 Agriculture in Africa Transformation and Outlook report. As shown in Figure 05, the FAO report indicates that there has been an increase in cereal crop productivity in East Africa throughout the years. However, this increase is not significant enough to create food security in the region. Moreover, the agriculture sector is currently under stress due to the desert locust outbreak in late 2019 and 2020. This climate change driven desert locust outbreak is the worst in 25 years, and it “has raised serious concerns regarding the potential impact on crops and pastures resource in 2020” (FAO, 2020, p.12). This can be seen in Table 04 where the estimated decrease in cereal production is presented.

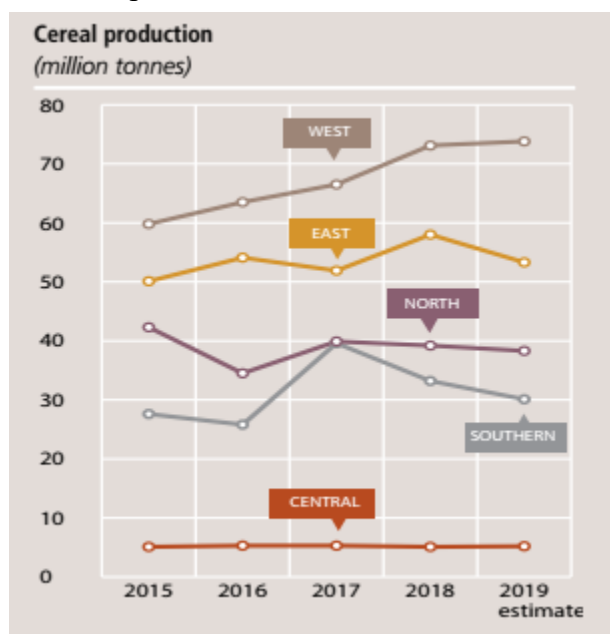


Fig 05: Cereal production in Africa source: FAO, 2020

	5-year average	2018	2019 estimate	Change: 2019 over 2018 (%)
Africa (37 countries)	101.1	110.8	105.8	-4.5
East Africa	52.0	56.6	52.0	-8.2
Southern Africa	10.0	10.8	10.2	-5.4
West Africa	34.3	38.7	38.7	0.1
Central Africa	4.8	4.8	4.9	2.3
Asia (11 countries)	351.9	364.0	373.7	2.7
CIS in Asia	10.5	8.9	10.7	19.5
Far East	332.7	348.6	352.5	1.1
- India	248.1	262.3	264.5	0.8
Near East	8.8	6.5	10.6	63.9
Central America and the Caribbean (2 countries)	1.1	1.1	1.1	-3.8
Oceania (1 country)	0.0	0.0	0.0	0.0
LIFDCs (51 countries)	454.1	476.0	480.6	1.0

Note: Totals and percentage change computed from unrounded data.
The five-year average refers to the 2014-2018 period.
¹ Includes rice in milled terms.

Table 04: Cereal production¹ of LIFDCs (million tonnes)
source: FAO, 2020

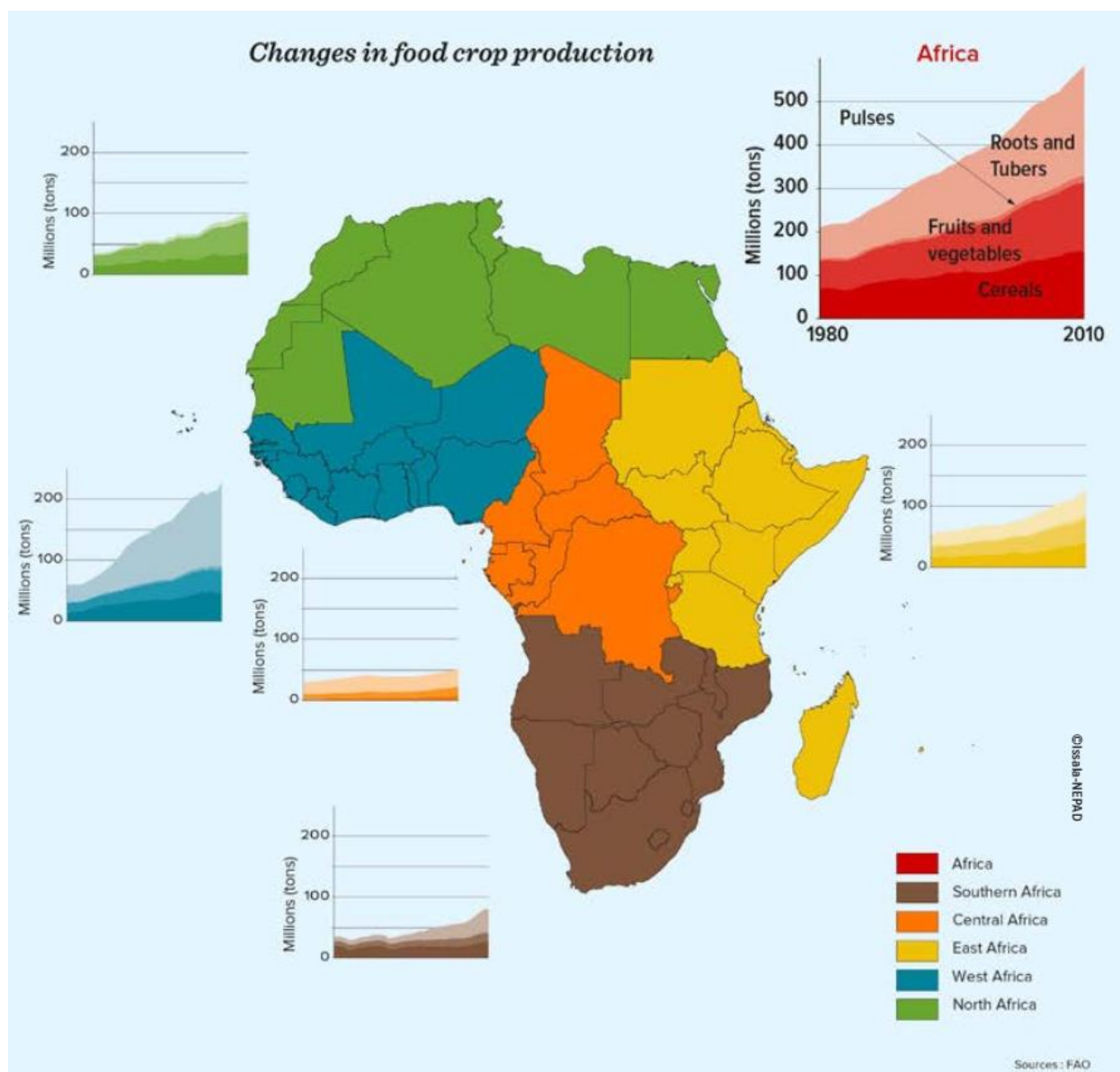


Fig 06: Change in food crop production source: FAO as cited in NEPAD, 2013

The most heavily discussed point by the interviewees was the difference in smallholder farmers' crop productivity between countries and sectors in a country. Ten of the interviewees gave examples that showed some countries had better performance in increasing their crop yield compared to others. This difference in crop productivity was attributed to factors such as the quality of the extension program in the country, and level access to market, information, and technology.

The way extension programs are managed and provided to the smallholder farmers by the governments in the region affects their productivity. This idea was discussed in detail by four interviews and mentioned by one other. The governments in some of the countries have a tight hold on the extension programs which make it difficult for the private sector to be involved; and the system lacks transparency which creates conflict with the smallholder farmers. One example of such a case was discussed by an interviewee comparing the government's role on the extension programs in Kenya vs Ethiopia, stating "the government in Ethiopia is still trying to manage the input supply. The technology promotion aspect and the extension system are a hundred percent within the government. So, because of that, there is a totally different scenario if you compare Ethiopia to Kenya". Another interviewee explained the case in Ethiopia as "currently the way extension program is operating is not sufficient. it doesn't give clues for Farmers why they should produce more, how they should produce more; particularly in the more remote areas".

Additionally, the difference in the level of access to market, information, and technology was seen in the working character of the smallholder farmers. It was stated that some smallholder farmers in some countries were more active in utilizing their farmland due to their relatively better access to information and other inputs. One of the detailed discussions was given by a project manager from SNV Ethiopia, where he compared the difference in smallholder farmers' working character in Ethiopia, Kenya, and Sudan. He stated that relatively, smallholder farmers in Kenya and Sudan are more aware of the market and land value compared to the smallholder farmers in Ethiopia; and highlights the ideas by stating:

"because the land has a value on it, people [smallholder farmers in Kenya and Sudan] are selling and buying, and investing in it. So, whatever they are doing they want to get a good income from the land. Because of that type of mentality, the link is better in there [Kenya and Sudan] with the input suppliers and the farmers. The farmers are aware of the market and that they should be competitive in the market. So, you'll see the private sector more engaged to supply those farmers. Coming back to Ethiopia the farmers don't even look at land as an investment; because I told you either they are getting it from the government or they inherited it from their family, so it is sitting there. They don't look at it from an economic point of view".

Similarly, the difference in the level of productivity between crop sectors in a country is also significant. Extension programs, value chain systems, and investments usually focus on a few selected crops, and this crop might be selected aiming to export than local consumption. On the other hand, the efforts to increase some of the selected crops don't come to fruition. In some of the crop sectors discussed in detail, it was seen that sometimes projects face unforeseen outcomes that impact the productivity of the smallholder farmers.

4.2.Improving agricultural value chain systems should be seen as a major component of the effort to increase smallholder farmers' productivity.

For the question "What do you think are the main challenges hindering smallholder farmers from increasing their crop production in East Africa?" it was found that there are multitudes of

constraints that hinder the crop productivity of smallholder farmers in the region. Seven interviewees talked in detail about the main challenges to improving the productivity of smallholder farmers using different cases and examples. The results of the interviews show that the challenges are interconnected and complex at country and region levels.

The explanation of the main challenges by the interviewees falls into a lack of incentives, poor market, seasonal farming system, and lack of information which all lead to underutilized farmland. These and other related constraints are shown to be why the smallholder farmers stay trapped in poverty. An advisor at the WCDI indicated the stagnated lifestyle of the smallholder farmers by saying “What I see as the main challenge is that many farmers don’t have an alternative source of livelihood to turn to. So, they remain smallholder farmers”.

The lack of incentives to produce more was discussed as one of the main factors influencing smallholder farmers’ crop productivity. This corroborates with the FAO (2015) report which states “smallholders will need appropriate incentives to adopt such sustainable and resilient productivity growth practices” (FAO, 2015, p. 34). Six of the interviewees talked about the positive influence monetary or market access incentives have on the smallholder farmer productivity. It was indicated that because the farmers don’t have the necessary incentives to increase their productivity, they usually focus on what they need to sustain. An elaboration of this idea can be seen in one of the interviewee's statements who reinforced the idea that for the farmers increasing crop yield is a cost-benefit question and economic issue by stating “why would they invest more in inputs and work harder to increase the productivity of their land if they lack the access to a market or if the markets don’t have demand for the surplus. it doesn't really warrant the effort”. Another example was from Tanzania, which stated, “because of maize export bans there [in Tanzania], producers and traders have less incentive to expand production so that is a constraint “.

Additionally, the farming system was indicated to be the same as it was centuries ago; however, the modern farming system is slowly seeping in. The current farming system is said to be dominantly seasonal and rain feed. This system is highly impacted by factors such as climate change and water availability. It was stated that when there is even the slightest shift in the rain or harvest season, the food shortage implications have very high. The reason for the high impact was indicated to be the combination of poor value chain system and high dependence of the farmers on one source of income.

A different idea discussed by three of the seven interviewees was about the impact of infrastructure and rural development. Salami et al (2010) support this claim saying “These factors [weak institutions, restricted access to markets and credit], including inadequate infrastructure, have constrained productivity growth of smallholder farming” (Salami et al, 2010). The lack of information and access to the market was indicated to be related to the poor infrastructure and rural development in the region. And there should be a rural development plan integrated into the agricultural development plans. It was shown that food security is not only about production, but also having the income and infrastructure in the deficit areas to access food from the surplus production areas in the region. The interviewee from the BENEFIT program indicated this by saying “rural livelihood is not just growing a crop. the technical people like myself we often make a mistake by thinking that rural development and agricultural developments are the same things,

but that's not the case". While the other interviewee stated that "food access is about incomes. So, food insecurity, I guess, in the region [East Africa], it is linked to overall rural transformation; if incomes increase in rural areas, then this will automatically also improve food access and food security". In this discussion, it was highlighted that considering the difference in productivity throughout the region and in the various parts of each country; agricultural value chain systems should not be isolated systems. It was said that the agricultural value chain system linkages between the countries in the region are very weak.

Out of all the challenges discussed the recurring ideas were the immense potential the region has for food production and the underdeveloped agricultural value chain system in the region. As presented in Figure 07 below, an illustration made by Wageningen Metropolitan Food Cluster (WMFC) shows that East Africa is one of the regions in the world where there is the potential for surplus food production. The discussions with the interviewees directly or indirectly point into the poorly functioning agricultural value chain system. And it was found that programs and projects that work to support the smallholder farmers' crop productivity usually focus on specific aspects of the value chain systems; which is production. It was said that despite the yield gap, the improvements in the production aspect of the value chains were encouraging. However, it is not enough to improve the input side of the value chain, but also the post-production. The increasing crop yield needs to be weaved into a proper value chain system which will enable the smallholder farmers to invest in their farmland. Moreover, the value chain system can play a major role in transforming the farming system, livelihood of the smallholder farmers, and the regional food security as a whole.

RATIO BETWEEN HIGH PRODUCTIVE LAND AND POPULATION IN 2050

The projection in this map is such that continents are depicted according to their real size. A square is drawn on a scale of 1.1. They are the same size as the actual land.

The amount of high productive land in each region is assumed to be one third of the total available amount of arable land in that region

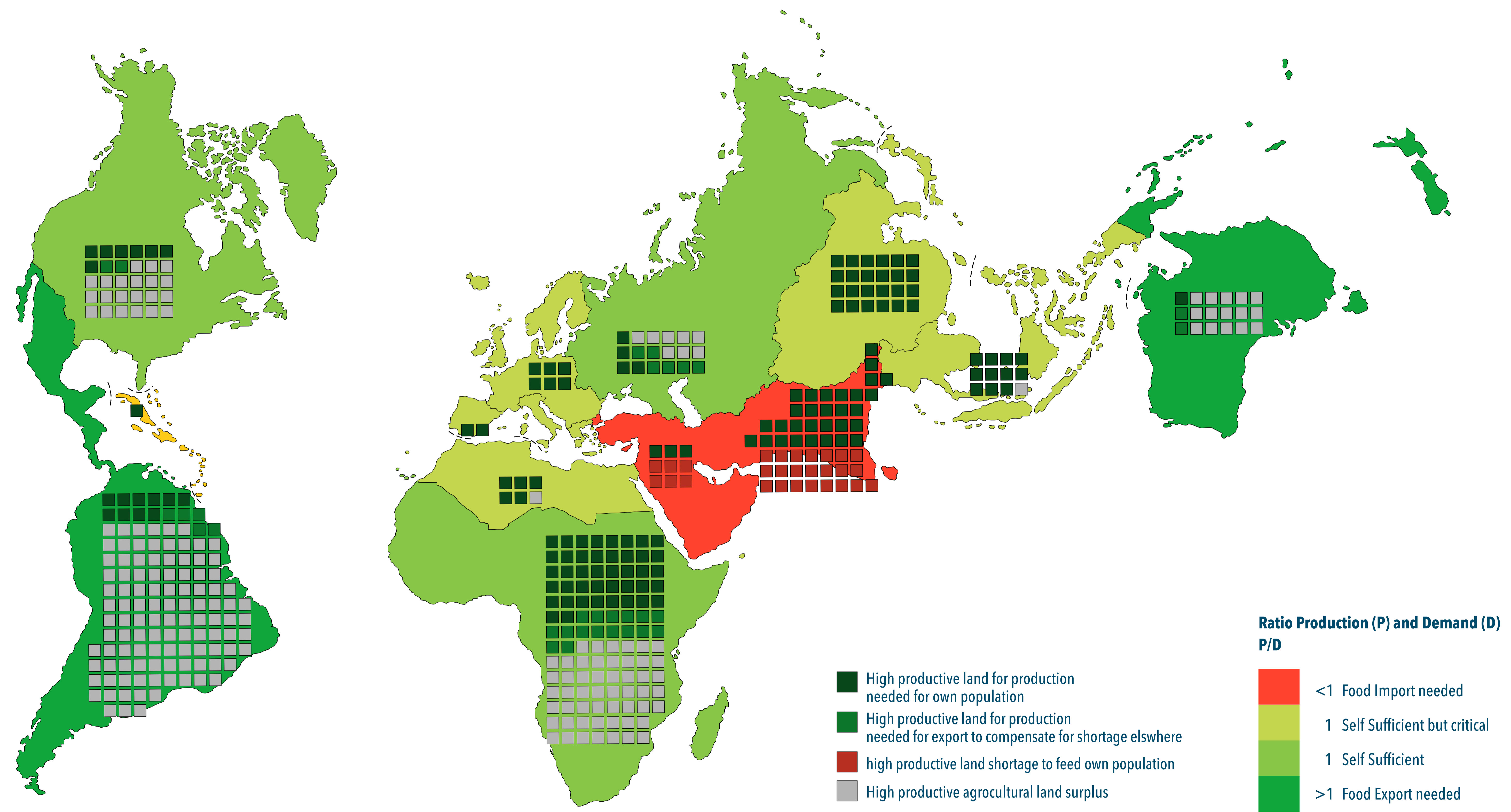


Fig 07: Ratio between high productive land and population in 2050 source: WMFC, 2019

4.3. Due to the increasing rural population, farmland size and labor productivity is decreasing

For the question “How do you see the relationship between smallholder farmers’ farmland size and crop productivity?” and “What is the trend in smallholder farmers’ farmland size in East Africa?” it was found that farmland size can directly or inversely relate to crop productivity depending on the context. Moreover, the average farm size in East Africa has been decreasing throughout the years, which has a significant impact on crop yield. Six interviewees in total talked about how the farmland size affects the productivity in East Africa. Out of these interviewees, two gave more detailed discussions supported with examples from some countries in the region. The result of these discussions shows that farmland size has a direct relation with crop productivity. However, this changes into an inverse relationship depending mainly on the availability of a labor force that can work on the farm.

The general message in the answers of the interviewees is that agriculture and the agricultural land in East Africa have a big potential to feed the region and even produce an export surplus. However, they all agree that the difficult aspect of agriculture in the region is that, despite the understanding that agriculture should be the driving force of development, most of the poorest people in the region are smallholder farmers. And these poor farmers have an averagely small plot of land, with an obsolete farming system, and trapped in poverty. This means any interventions in the agriculture system to change this situation need to be comprehensive and requires a large investment.

When discussing the smallholder farmers and their farmlands, an interesting point raised by one interviewee was about the function of land in the region. He indicated that farmland in some of the countries has two functions. First, as a source of food or income, through the production of crops. And second, as a source of social protection, they get as owners of that piece of land. This indicates the importance of farmland in the region goes beyond food security.

One of the important trends highlighted by the interviewees regarding farmland was that it has been decreasing significantly. It was pointed out that the ever-increasing rural population is the main reason for the decline in smallholder farmers’ farm size. The smallholder farmers in East Africa have large family numbers; when the children come out of age, they need farmland since they don’t have an alternative job. This demand for land is usually met by their family or community, who give them by slicing a piece of their land. Considering the average farmland size which is less than 1 hectare the smallholder farmers can’t produce significantly more, and losing part of the small land they have is a major constraint. One of the interviewees, a coordinator in the BENEFIT program in WCDI, highlighted that the smallholder farmers can still improve their productivity in the small farmland they have, especially in sectors such as horticulture. And to do that they have to change their substantive farming attitude into a semi-commercial attitude. However, she indicated that this is becoming more difficult to realize due to the decreasing farm size by stating that “I think one of the challenges, especially in Ethiopia is the tiny sizes of farms; of course if you keep splitting plots for children and the next generation, it will be a dream to think there can be semi-commercial production”. While the interviewee who co-run the program stated his concern saying;

“I know that the governments in Ethiopia have always valued their agricultural population very much, but there is still a lot of poverty and what I’m really concerned about is that so many fields are at 0.25 hectares. So you simply drive up to a wall where there is no opportunity to take new land into production because everything has been taken into production and the fertility is going down because the land has produced its used every year and the level of fertilizer is too low and farms just managed to make ends meet”.

These statements align with the reports from various sources. World Bank (2018) report shows that the rural population in all Sub-Saharan Africa countries is increasing. And NEPAD’s (2013) Agriculture in Africa Transformation and Outlook report shows that despite the increasing urban-rural migration, the rural populations have continued to increase in absolute terms. The rural population in Africa covers 48% of the total population, while this number is around 70% in East Africa (NEPAD, 2013). Moreover, the report shows the agriculture sector is expected to absorb the ever-increasing youth joining the workforce (NEPAD, 2013). The report indicates the impact of the increase in population stating “despite rapid urbanization, the rural population is growing and land pressure is mounting” (NEPAD, 2013, p.17).

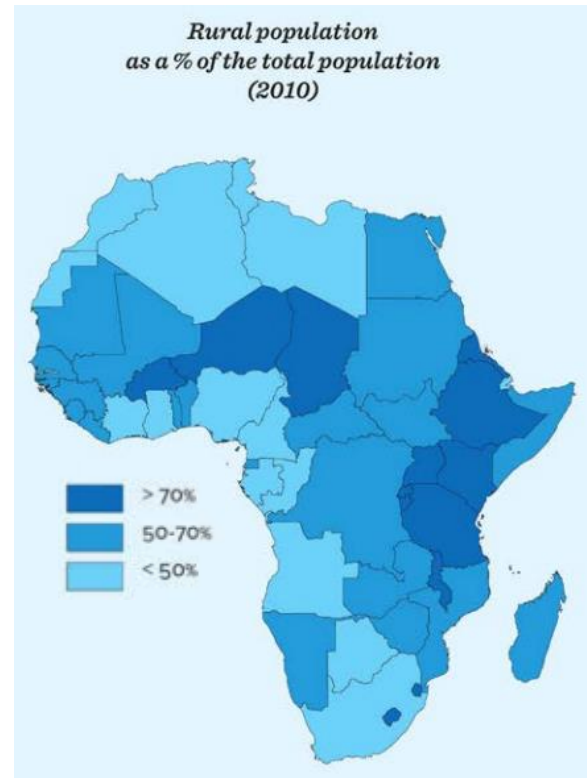


Fig 08: Rural population % source: FAO as cited in NEPAD, 2013

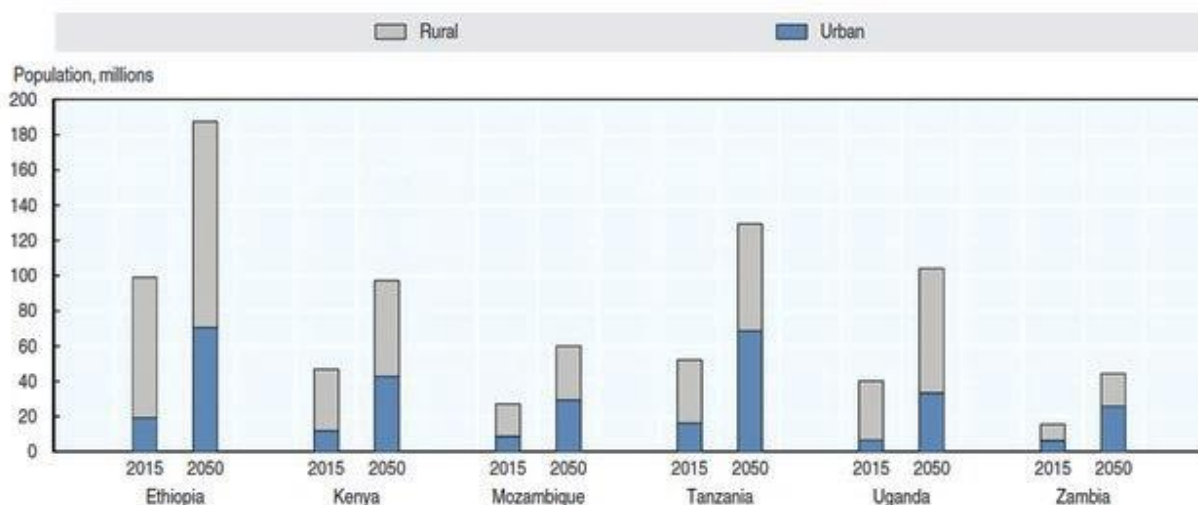


Fig 09: Urban and rural populations, 2015 and 2050, for a selection of eastern African Countries. source: Ngubula, 2017

Two of the six interviewees indicated that the information about how small-scale producers are achieving better yield than the commercial farmers is because they have small farmland is misleading. One of them, an advisor at the WCDI, highlighted that “the trend that was observed was that the small-scale farmers were able to manage their crop better because of the size is more manageable. these thousands of hectares of larger tracts of land were being mismanaged and also largely reliant on seasonal migrant laborers”. While the interviewee, a researcher at the German Development Institute, indicated that when you look into the issue from a labor productivity perspective the small-scale farmers are less productive. He pointed this out by saying “the land productivity is very high because you have a small area of land and you have the whole family working on the land, so you have maybe higher land productivity, but labor productivity is low”. And at the end of the day, this family that is said to have higher yield might not even be able to feed the whole family.

Moreover, it was indicated that labor productivity is more relevant than land productivity. Considering the farmers in East Africa put a limited number of hours to work due to the seasonality of the farming system, labor productivity is a better indicator. It was indicated that the farm labor force in East Africa’s agriculture sector is sourced by the family members in most smallholder farmer households. This means the household with a big family number can have more workers on the farm, while the farmer with big land but the small family number might not have the labor force to farm the land. An example for this was given by one of the interviewees about a case in Zambia stating;

“You have often farmers who say that they have a very large area of land, but then they can only work in a very small area of it because they only depend on manual labor. And so, they might use the area that they have very productively because they have small areas and maybe a lot of families. But to improve their livelihoods they have to increase their farming area because this small-scale area, it's not enough to really make them go out of poverty”.

4.4. The spatial organization of farmland impacts crop productivity

For the questions “What implications does the spatial organization of the smallholder farmers’ farmland have on their productivity?” it was found that due to the current spatially fragmented farmlands the land productivity and labor productivity potential of the region are not being utilized properly. Five out of the twelve interviewees talked about the correlation between the spatial organization of the farmlands in East Africa. And it was mentioned that to leap out of poverty, economies of scale can play a vital role in the agricultural sector in the region. To support their ideas the interviewees have discussed examples of experimental projects that work on the spatial arrangement of farmlands in some of the countries.

The significance of the spatial characteristics of the land in farmland management was indicated to be important. It was stated that with the increasing trend in crop productivity in East Africa, the land management practice is intensifying. This is seen in the increasing use of relatively better agronomic practices, and inputs such as fertilizer and improved variety of seeds. However, the

crop yield increase from intensification is limited due to inefficient land management and the spatial character of the farmlands among other reasons. The farmlands in the region are spatially organized in small pieces which makes it difficult to efficiently utilize using modern land management systems. The importance of land management was seen on a statement by one of the interviewees, an advisor in the WCDI, who said “using good quality seeds can account for closing half of the yield gap. So, I think the remainder comes from good Land Management practices, but also the use of other inputs that improve the potential of the land”. It was highlighted that it is difficult for smallholder farmers to transition from using animals to modernized machinery not only due to the lack of buying capacity but also the spatial arrangement of their land. To avert this challenge small number researches and projects have been conducted in some countries to rethink the spatial organization of the farmlands to enable efficient land management and productivity.

One of these studies was discussed by two interviewees from the BENEFIT program; an expert who co-run the program from Wageningen University, and a scaling & planning expert at the BENEFIT program cluster in Addis Ababa University, Ethiopia. In one aspect of the program testing, cluster farming was conducted in different crop sectors in Ethiopia to see if the change in the spatial organization of farmlands impacts productivity. The interviewee who co-run the program highlighted the reason behind the idea by saying “the farmers have 0.25 hectares, or maybe slightly more [farmland] so you get buckets of wheat side-by-sides, and I think it becomes important to really look at this cluster type of farming to develop the economy of scale in that area”. It was pointed out that cluster farming creates larger tracts of land which is more suitable for mechanized agriculture. Moreover, it was found that there is a study being conducted in the program on the performance of cluster farming and how it might contribute to the modernization of agriculture in the country. The cluster farming system was created by merging the adjacent farmlands of the smallholder farmers. The scaling and planning expert stated that “based on the different commodities and their [farmlands] potential for production, cluster farming is started in different areas of the country”. Other criteria used to merge the adjacent farmlands were the type of crop they produce. According to the interviewees, this enabled the smallholder farmers to easily and cheaply access extension services and input supplies. Moreover, the scaling and planning expert stated that;

“The formation of the cluster farming was able to create competitive production and commercially oriented attitude in the smallholder farmer. It was able to improve access to input supply, market, and other services. It also improved, based on our observation, the crop yield of the farmers”.

Another experience on the correlation of smallholder farmers' land productivity and its spatial organization was discussed by an agricultural economist at the German Development Institute. It was indicated that by collaborating, economies of scale can be used both in production and input acquisition by the smallholder farmers to better utilize their land and their strength in numbers. The case explored was in Tanzania, where a project tried to reintroduce a farming system called “Block farms”. Block farm similar to cluster farming requires the farmers to put together their farmlands as a collective farm. It was expected to enable easy access to mechanization, transportation, and market. However, this way of farming was not new in Tanzania, it was forced

on the farmers by the previous socialist government which made the success to be mixed. However, it was indicated that some communities were able to improve their productivity using Block farming. One important factor that was highlighted was trust among the members of the cooperative. The idea was explained as follow;

“in many cases, it didn't work. And I was told, it is because of trust issues. One person was in charge of the farm so if you had a farm manager, but then the farm manager might use funds for himself... But then there were some schemes which worked. Those were schemes that still continued with this block farming approach after the end of socialism. They just trusted in that process. They knew the benefits of collective farming and they saw the positive thing. And maybe they also had some kind of checks and balances already somehow implemented. Yeah, so I would say for some crops and for sugarcane I think this [Block farming] kind of farming would definitely increase the production”.

These are some examples that explored the positive impact a well-planned spatial organization of farms can benefit the crop productivity of smallholder farmers in East Africa. And the answers from the five interviewees coincide about the potential such systems have in transforming the agriculture system in the region.

4.5.Improving the quality and quantity of products balances the power asymmetry in the modern agricultural value chain systems

For the questions “Do smallholder farmers in East Africa have bargaining power in the agricultural value chains?” and “Who manages agricultural value chains in East Africa?” it was found that there is a significantly large power gap between the smallholder farmers and other stakeholders in the agricultural value chain systems in the region. Eight interviewees out of the eleven talked about the power asymmetry that exists within the modern AVCs in the region. And from the results, we can see that all of them agree that there is power asymmetry. Their arguments were supported by cases they presented from some of the countries in the region.

The first idea that was expressed by the interviewees in one way or another was the importance to realize there is a significant difference in the power dynamics based on the country and sector. It was pointed out that there are differences between agricultural value chains and the structure and aim of companies in those value chains. Another major point was that power asymmetry between the farmers and other stakeholders in the modern AVCs in the region is highly dependent on the type of relationship that exists amongst them. After indicating these points the answers they give can be summarized as there are varying degrees of power asymmetries in the agricultural value chains in East Africa; and despite these differences, the trend is that most of the time smallholder farmers have less power than other stakeholders.

It was highlighted that industries that get their resources from the smallholder farmers usually have the most power in the value chain systems. The interaction between them and the farmers is usually driven by facilitating and protecting their interests. A coordinator at the BENEFIT program indicated this saying “The companies have the most power. Because the farmers, of course, hope

they get a good price, but they have in general very little influence on the arrangements”. This lack of power to influence the arrangements makes the market unfavorable to the smallholder farmers. Which was explained by a researcher at the German Development Institute stating “...I think that in most cases farmers don't have much bargaining power, they take the price as given”.

Different reasons were given by the interviewees that indicate what factors affect the power asymmetry and where they arise. These were the quality of products, whether it is a formal or informal relationship, smallholder farmers' level of organization, level of government involvement, and extent of middlemen involvement.

The type of relationship the smallholder farmers and industries have was shown to be an important factor in the power asymmetry in the agricultural value chain systems. The type of relationship is mentioned to be dependent on whether they have a formal or informal relationship. The formal relationships such as contractual agreement were indicated to be relatively better than the informal arrangements. It was shown that formal relationships have a better chance to enforce the interest of the stakeholders. This provides the smallholder farmers with some power to protect their interests. However, it was highlighted that a formal contract can sometimes have a downside for the smallholder farmers. This was seen in one of the discussions, from the value chain expert who said;

“[in contract farming] you can have some extra services like credit, technical assistance; at the same time, you can kind of become dependent on the buyer. So, there may be some power asymmetry issues as well. Because the buyer, they maybe have more money or more knowledge or they maybe not always with the good intention”.

A similar argument was by Amanor (2019) stating even though companies often appeal to equity and social wellbeing of farmers, the measures they take in the name of improving quality of product “forces smallholders and smaller independent producers into dependence on contracts with TNCs⁵ or into liquidation” (Amanor, 2019, p. 57). On the other hand, in informal arrangements things like price can randomly change which usually doesn't benefit the smallholder farmer. And since their livelihood depends on the income from selling the products, they will have no choice but to sell on the price they are given.

In East Africa, governments play a major role in the formal market. The governments in some countries are deeply involved in setting what is a fair price. This has varying impact on the stakeholders in the value chain system. While the price-setting can protect the farmers from getting a low price for their product, it was said it discouraged private sectors who want market-oriented exchange from investing. Another aspect of the relationship is the level of interaction. It was said that when companies invest in improving the products of the smallholder farmers, they require some conditions to be fulfilled. And this condition can have a negative impact on the farmers and increase the power asymmetry.

⁵ Transnational Corporations (TNCs): A company that is controlled from its home country but has large operations in many different countries. e.g. food processing, supermarkets, etc. (UNCTAD, 2009)

The other recurring idea that was highlighted by eight interviewees with regards to why the smallholder farmers don't have the bargaining power was the lack of products that have the quality and quantity the buyer needs. Moreover, the industries require a certain quality of product to run their operation; so, they are the ones who dictate the terms of the arrangements. It was discussed that when the farmers have quality products, they can ask for a better price and choose who to sell it to. However, the current reality is that the quality of most smallholder farmers' products in the region is below international standard. And this gives the upper hand to the local or international buyer to stir the arrangement on their favor. In contrast to this, an example was given by an interviewee about one rare case they saw smallholder farmers wielding better bargaining power. The interviewee, a coordinator in the WCDI, talked about a group of smallholder farmers in Kenya, who managed their product quality to comply with the global standard. It was stated that this gave the farmers the motivation to look for better arrangements in the value chain system. This was indicated by saying;

"I asked them about how happy they were with the exporting companies. And the answer was that for the time being, it's okay. But they are looking for other export companies now and we want a higher price because the quality of our product is outstanding".

4.6. The weak linkage of smallholder farmers to the modern agricultural value chains in the region impacts their productivity

For the questions "How do you see the influence of industries [buyers, processor or exporters] on the smallholder farmers crop productivity in East Africa?" and "How do smallholder farmers and the industries in the value chain system interact in the region?" it was found that the linkages between the stakeholders in the crop value chains systems are weak, and underutilized. Four interviewees talked about the linkage between the smallholder farmers and industries in the crop value chain system in detail, while five interviewees discussed to some extent. They all pointed out similar views on the existing linkage in the region and what factors affect it.

It was highlighted that the industries that have better linkage with the smallholder farmers had a positive influence on crop productivity. Some companies were able to create a value chain system that improved the productivity of smallholder farmers which boosted their inputs. Different cases of successful value chain systems were discussed where the industries worked with the farmers to boost their crop production. However, such linkages were shown to have a short value chain and located in limited areas most of the time. This short and small-scale linkage is seen in the example from Ethiopia where a beer factory created a strong linkage with a group of farmers who produce malt barley. An interviewee stated that;

"in Southern Sidama area malt barley has been one of the Commodities that we have been promoting because farmer liked it and there was a market and it has become so successful that the beer industry has been able to reduce its Imports because the local production was so high that they didn't need to import need to import that much barley anymore".

In the region, the positive influences of linking farmers with the industries were not achieved at a bigger scale in most agricultural value chains. This was attributed to various complex issues. The interviewees said that linkage between the smallholder farmers and industries in the crop value chains is different in each country and the type of crop sector. The social, political, and other contexts in a country and the motive of the industries in the value chain systems affect the linkage. Moreover, this linkage is impacted by the type of relationship and level of interaction amongst the stakeholders.

Some companies are indicated to have better social responsibility agenda and they closely work with the smallholder farmers. They provide extra services to the smallholder farmers in the form of credit, technical assistance, or input supply to improve their productivity. This way of collaboration was indicated to be advantageous by an interviewee stating “let's say if we talk about a firm that's buying the produce of farmers, then it's also in their interests for the smallholder farmers to have good yields”. However, it was indicated that in some cases the collaboration didn't show a positive result. It was said that either the farmers sell their products to someone else, or the industries take most of the profit. These and other reasons were shown to hamper the development of value chain systems and led the industries to perform on less than half of their capacity. This was seen in an example by an interviewee from WCDI gave stating;

“as you go up what happens is you see oftentimes companies put a lot of money into educating farmers how to increase production, how to increase quality, how to make sure they comply with all kinds of standards, and they even give an advance payment for fertilizer or for seed or whatever. But it happens so many times that the supply chain collapses because the farmers decide to sell their products somewhere else not to the company, despite the contract which might be there”.

On the other hand, the smallholder farmers leave the value chain system due to constraints such as low price. It was also stated that there are often many middlemen between the industries and the smallholder farmers which contribute to the low price. Moreover, the high quality and quantity demanded by the industries create a challenge for most farmers who are subsistent. These issues are illustrated by a researcher at the German Development Institute who said “farmers have buyers, but then they might only have one buyer who always comes to the community. So, they cannot choose the buyer, so that buyer might extract a lot of the value in the value chain”. Another discussion about the challenge smallholder farmers face was given by a value chain expert stating;

“as a producer, especially if you switch to very a strict contract and you have to make a lot of investments for that contract. For example, in a machine or in achieving some kind of quality that only that buyer wants. Then you become very dependent. And if that market collapse or the firm says no, well, I'm going to a different country, goodbye, then you are stuck”.

The linkage in the value chain systems is also affected by the relationships the farmers and industries have; which ranges from formal contracts to informal arrangements. The dominant form of interaction in the value chain systems in the region was shown to be informal. The most common form of informal interaction in the region is a verbal agreement. And the expert said that it is

always suggested to the stakeholder to create formal agreements to ensure better interaction. Considering often, the smallholder farmers are side selling and the industries don't keep the promises they made to them; trust is an issue in the system. So, formal contracts are believed to improve the trust and the interaction to some extent compared to the informal arrangements. However, there are cases discussed where both formal and informal interactions either worked or failed.

4.7. Creating an alternative source of income for the smallholder farmers ensures a better transition to modern food production

One of the interesting ideas that came from the interviewees in one way or another was the importance of alternative income. Five out of the twelve interviewees briefly discussed this idea to a varying degree. They mentioned that considering the current and future trends on food production, land availability, and population dynamics, smallholder farmers in East Africa should have access to alternative sources of income.

The main challenge for smallholder farmers in East Africa was indicated to boil down to income, specifically cash flow. Other than food smallholder farmers have expenses they have to cover throughout the year which is basic needs. These are school materials for the children, clothes, and other things they have to buy from the market. It was said considering they usually need quick cash flow to cover such expenses they side sell or leave the value chain which disrupts the input flow to the industries. And it was indicated that an alternative source of income would reduce the pressure to sell products for low price informally. An interviewee who is a coordinator in the WCDI gave an elaborate example of the cash flow problem stating;

“So, life cycle and the need for cash inflow differs by the year. In September or whenever the school starts, they want to send their kids to school. And in these times, they need more money inflow right away. So even though you want to include them in the supply chains, because of the terms and conditions on when they can sell and when they get paid. That could be anywhere from two weeks to 30-day payment; Not on the spot. They might decide to sell their produce right away if they need cash right away. So, for them, that's a bigger motivation to get cash right away than to be part of a stable supply chain”.

It was also mentioned that the absence of an alternative source of income coupled with limited productivity, decreasing land availability, and increasing rural population, the children of the smallholder farmers are being pushed to migrate to urban areas or other countries which has become a global phenomenon.

Another aspect of the cash flow problem was discussed by an expert [who co-run the BENEFIT program in Wageningen] with regards to the smallholder farmers' willingness to invest in their farmland. Based on the study they conducted in one of their projects he highlighted that due to the cash flow problem, the farmers have to prioritize where they spend the little money they have. And it is usually seen that the immediate need of the household is what comes first. He stated this as;

“They don't have cash flow. The whole year they're busy making ends meet paying school fees or making sure that the house keeps going better. The surpluses are very small, so it's always the question will I buy fertilizer and if yes how much and what can I afford...room for maneuver in the smallholder sector is very small”.

A 2015 report on the economic lives of smallholder farmers in East Africa by FAO supports the importance of alternative income for smallholder farmers. The report states “Off-farm employment, in addition to complementing farm income and contributing towards food security and poverty alleviation, provides an important risk management tool by diversifying income sources. In times of negative shocks that affect agriculture, such as droughts, families can rely on off-farm income to maintain their livelihoods” (FAO, 2015, p. 17).

During the discussions, three of the interviewees indicated that major changes need to take place for the current food insecurity to be resolved in the region. It was said the whole system of food production in the region needs rethinking and transformation. And it was pointed out that the value chain system has to be redesigned. The important role the industries can play in creating an alternative source of income was also described. An advisor in the WCDI explained that the policy objective of countries in the region to intensify the productivity of smallholder farmers' land is not future proof. He said;

“I just don't think that [intensify production in a small tract of land] is the solution to increasing productivity and food outputs. I think it's very important for sustaining those livelihoods because they have no alternative to turn to; if there were large scale industries that could draw labor then I think that many farmers would probably leave rural areas to get involved in those industries and in doing so create the space for others to take up agriculture as to Enterprise”.

Moreover, the expert who co-run the BENEFIT program discussed the need for considering an alternative source of employment in the region for the rural population. The main focus being on the youth which cover a large portion of the population and who are unable to utilize their potential. And the uncertain future of the agriculture system in the region which is not expected to meet the food demand. He explored the idea of stating;

“So, it needs a major investment to take their large rural area in the country to the next level and also offer job opportunities for young people. The question is what can other sectors outside the agriculture absorb in terms of employment; will your social sector take that over, will your manufacturing sector take that over or can we make new employment in the agricultural sector by getting young people to become agricultural entrepreneurs,... you can have incremental change by making sure the farmers get some more money, some more room for maneuver, but the Quantum Leap change is to really think whether the [agriculture] system can still stay as it is”.

4.8. The lack of complex regional market linkage of agricultural value chains is hindering East Africa from mitigating its food insecurity

During the interviews, another interesting idea discussed was the lack of complex agricultural value chains and the market linkage between the agricultural value chains of countries in the region. Four interviewees out of the twelve talked about the idea; one interviewee briefly mentioned it while another interviewee, an agricultural economist elaborated more.

It was indicated that considering the seasonal nature of the rain feed agriculture system in the region, the inconsistency of rain highly impacts food availability in some areas more than others. And due to the current climate change, this seasonal food production is facing bigger challenges every year. It was pointed out that due to this difference in food production, food insecurity should be seen as a regional challenge rather than only at a country level. One of the interviewees, a coordinator in the BENEFIT program indicated this stating “this [food insecurity] is cross-boundary, seeing it much more as a regional Challenge and regional collaboration, I think that would be better. People and even countries grow more to themselves rather than saying also in agriculture we need to work together”. And it was argued solutions should consider the regional level agricultural potential in East Africa. To support the argument on why we should look at it at a regional level the interviewees pointed to the European food supply system and the East African Community’s policy on trade in agricultural commodities and services.

It was indicated that the European union harmonizing agricultural standards, integrating the value chain systems and supply chains was what enabled the region to transform its food production. Moreover, the effort of the East African Community (EAC) to harmonize seed regulations and work together on agricultural development is an important step towards improving food security. The agricultural economist interviewee indicated the importance of regional integration stating;

“food insecurity is sometimes a geographical topic; you have in a country a low production and you don't open your borders to other countries, then you will face a deficit of food availability and that can negatively affect food security. So, I think that the trade policy is also an issue regarding free-flowing food. The trade policy influences also the incentives of producers and traders”.

The short, isolated, and simple agricultural value chain systems that are dominant in East Africa was said to be one aspect of the crop production and supply problem. It was highlighted they are not large or complex enough to create a significant impact in the region or to contribute to transforming the agriculture system. And it was suggested the value chains should be integrated as a regional system to combine their effort in solving the food shortage. A coordinator from the WCDI talked about how undeveloped the agricultural value chain system in East Africa is saying;

“So, as you go from underdeveloped sectors to develop the sector, you'll see chain integration more and more. Keep that in mind. It's not like in the Netherlands, or Europe where we have really long supply chains; it is [agricultural value chain in East Africa] very, very short and it is not yet integrated. Mostly you have only two players; like in the soybean chain in Ethiopia, only the smallholder and the company itself. So, keep in mind how developed the sector itself is and how complicated the chains are”.

4.9. The success of agricultural value chains in the region is dependent on the segment of smallholder farmers and the composition of the farmer cooperatives

An idea that was explored by the interviewees about the modern agricultural value chains in East Africa was that industries in the value chain are significantly impacted by the type of farmers participating and how farmer cooperatives are created. Three interviewees gave broader explanations while one interviewee only mentions the idea. They stated that the segment of smallholder farmers that are linked to the industries should be matched properly. And when smallholder farmer cooperatives are being created in the value chain systems, it shouldn't be random.

One aspect of the discussion was about the segment of smallholder farmers. It was said that since more than 50% of the smallholder farmers in the region are subsistent farmers and noncommercial farmers; expecting them to supply the industries was unrealistic. And linking these subsistent farmers to supply the industries was promoted by different national and international organizations in the region. This unrealistic expectation of stakeholders can be seen in the explanation of the value chain expert interviewed, who said;

“it is promoted by NGO and governments, the whole fact that we are talking about linking smallholder farmers to modern value chains... So, there's a lot of policy importance given to this [linking smallholder farmers to industries]. And the idea is that linking to the modern value chain is good because you can have a higher income and improve livelihoods. That's a big assumption. Generally, the conclusion of a lot of studies and also what I've seen in different East African countries is that it's not the smallest of the smallholders that are able to participate because they don't have the volume and the socioeconomic assets... You can't go from the spot market to delivering to a large market in one year”.

Another interviewee a coordinator in the WCDI indicated the importance of linking the industries to the right segment of smallholder farmers in the agricultural value chains stating;

“The problem with the supply chain is, the value chain development initiatives they don't look at the target audience. They just put it together and if they can produce the crop and they get the money for it, that should be good. But that's not how it works. I hear that we have to have the poorest of the poor catching up with supply chains. No. They need education, they need healthcare... And then you can see what we can do in the supply chain. But if they don't have assets, if they don't have the basics, they cannot attach them to supply chains because the motivation is survival at that level. So, you have to balance the tradeoffs here and you should not connect the smallholders at subsistence level to companies who want to provide for export because it's very likely not going to happen. So, you have to be very careful which segments you are targeting”.

The other aspect of the discussion was cooperatives, and how they should be utilized to improve crop production of smallholder farmers. It was said they can be used as tools to link the smallholder farmers to value chains that have a large market. The optimism on cooperatives was indicated to be on the fact that the industries usually prefer to work with a group of produces or cooperatives to reduce transaction costs. Another reason is considering the price margin problem due to

middlemen, which can be resolved if the farmers use cooperative. An FAO (2015) report supports the potential of cooperatives for smallholder farmers stating “Forming cooperatives to collectively increase the scale of farm operations can help smallholders enter these markets, but in many cases, collective action struggles to assume the role of entrepreneur effectively” (FAO, 2015, p. 29).

It was highlighted the challenge of being a smallholder farmer with a constant struggle to support the household and also work in a cooperative as a group. It was also emphasized that cooperatives don’t succeed easily; there are many success factors for a cooperative to function well. It was indicated that before the creation of a cooperative it should be clear to all stakeholders what the motive is. They should know if it will be a marketing group, input supply group, funding group, or any other type. And look into what the farmers want and the level of organization that they appreciate.

It was indicated that the cooperatives in East Africa are usually marketing cooperatives. They are usually created with limited insight into the success factors. Despite this, there have been many good examples of successful smallholder farmer cooperatives throughout the region. An interviewee who co-run a BENEFIT program indicated this with example saying “in Kenya, you have some major cash crops and there you can see that farmers if they are organized, they can deliver”. But there are still major challenges that are faced and many cooperatives collapse. On the smallholder farmer side, the main factors pointed out as the reason for the failure of most cooperatives are organizational governance and attitude of farmers. The governance in a cooperative was said to be an obstacle that needs to be cleared for the improved performance of the organization. And farmers should have equal say, and autonomously run their cooperative. This can be seen in the statement of the interviewee who co-run a BENEFIT program, stating “cooperatives that are functioning and that are transparent and that are run by Farmers themselves have been really successful”. Especially gender inequality was pointed out to be one of the main challenges by a value chain expert interviewee who said;

“for example, in Ethiopia. I found that I was looking at gender, and most of the members are male. But then the female members, for example, may have a very good idea but they were not willing to speak up in the meetings because of the cultural patterns, and religious patterns... So, yeah, as a corporative you cannot just put 20 farmers together and say ‘now, you're a cooperative’; you need something extra”.

The second point was the need for the commercial attitude from farmers in the cooperatives. It was said it is difficult to work with farmers who are farming due to a lack of options for alternatives livelihoods. If their need is not to boost their production and work with the industries in the value chains, they might not be motivated to produce more than they need. This was seen in an argument made by a coordinator in the WCDI saying “it is the semi-commercial Farms that are prepared both in mindset, but also in the way of working to increase production, to try out new things, to deliver the product to companies”.

A woman is seen from behind, standing in a vast field of tall, golden-brown grass or wheat. She is wearing a vibrant red dress with a repeating pattern of interlocking circles in green, yellow, and white. Her head is wrapped in a matching red cloth. Her right arm is raised, and she appears to be shielding her eyes from the bright sun, which is low on the horizon, creating a strong lens flare and bathing the entire scene in a warm, golden light. In the distance, a line of dark trees marks the horizon under a pale sky.

CHAPTER FIVE: DISCUSSION

5. Discussion

This section presents the discussion developed by reflecting on the results presented in Chapter Four, the theoretical framework, research objective, and relevant literature. The sub research questions are answered and discussed separately by summarizing the major finds presented in chapter four. After which the limitation of the study is presented to clarify how the methodology used and choices made by the author influenced the study.

5.1. Theoretical reflection

Sub research question 1: “What is the impact of the collaboration of smallholder farms in modern AVCs in East Africa on their cropland productivity?”

There has been an increasing interest of stakeholders in East Africa to accelerate the economic transformation of the region using modern AVCs. However, there are varying degrees of collaboration, and different contexts, that affect the productive integration of smallholder farmers in modern AVCs (Barrett et al., 2010; KIT, 2006). And as discussed in Chapter One the participation of the smallholder farmers in modern AVCs has not been productive. In this study, the variables “crop production” and “cropland area” were adopted from Wood et al (2016) to examine land productivity. How collaborating in modern AVC systems affect these two variables were used to answer the impact of the smallholder farmers' participation in the modern AVCs has on land productivity.

While some literature and major stakeholders such as FAO and Bill & Melinda Gates foundation support the intensification of smallholder farmers' productivity on the land they have, and others such as the governments [in some East African countries] argue for large scale commercial farming in the region. In a 2013 online debate organized by Association for International Agriculture and Rural Development (AIARD), stakeholders from both sides of the view argued on the question “Africa Agriculture: Does farm size really matter?” (WLE, 2013). While pro large farms supported commercial agriculture, pro-small farms supported improving technology to enhance the existing system. furthermore, countries such as Ethiopia and Kenya are supporting the commercialization of agriculture by merging the smallholder farms. For example, the government of Ethiopia had a press release in 2019 about an experimental large-scale commercial farming taking place in a smallholder farmer community, where the Prime Minister Dr. Aby Ahmed indicated his support stating “...Previously farmers were harvesting on individual plots and now they have managed to develop their cluster farms. Therefore, we came here to witness the efforts made by the farmers and to provide the support they might need from the government” (Reliefweb.int, 2019).

Considering that around 70% of the population in East Africa are smallholder farmers both sides have valid points. The smallholder farmers should be assisted to feed themselves and the region. However, as the findings in this study indicate if there is no plan to transform the food production system, the food insecurity will only get worse. Considering the current realities in smallholder farmers' productivity “closing the [crop yield] gap will be more difficult than before” (FAO, 2015, p. 33). So, instead of focusing exclusively on intensifying land productivity, there also needs to be a plan to redesign agricultural land use. Understanding this and the future calamities climate

change will impose in the region, we need to look into options for the future. And as presented in the discussions below, modern AVCs have the potential to enable the transition of smallholder farmers' livelihood and the agricultural system as a whole. They can be used as a transitions system from the obsolete food production and land management system the region is entrenched into a future where food wouldn't be the primary challenge for existence in East Africa.

This study was able to find that smallholder farmers' productivity has been improving throughout the years. This aligns with reports from organizations such as FAO (2020), and NEPAD (2013) where they indicated the trend in increasing crop productivity. The improvement in productivity was attributed to the efforts made to modernize the input supply and land management system. However, this change could not fully utilize the productive potential of agricultural land in the region. Due to which the smallholder farmers in the region are in persistent poverty. And the region's agricultural product import dependence is increasing. The study was able to find that the constraints in significantly improving production are related to inefficient utilization of the land. And this poor land utilization in the region is attributed to the rudimentary land management system and underdeveloped modern AVCs.

An aspect of this rudimentary land management system was seen in the spatial character of the agricultural land owned by the smallholder farmers. These agricultural lands in the region are found to be an average of less than one hectare. Not only that the trend in the farmland size has been decreasing throughout the decades. Due to which the increased productivity is bound to stagnate in the near future. This shows that with the ever-increasing rural population in the region, the availability of farmland is going to keep decreasing which leads to lower labor productivity. This claim supports the study by Jayne et al (2016) which stated due to the rural population increasing it is not a surprise "that most farms in the region are becoming smaller" (Jayne et al 2016, p. 198). The decreasing trend in labor productivity means there will be more mouths to feed in the households while food production is decreasing.

To mitigate such challenges in the region, agricultural land management needs rethinking and transformation. In addition to that creating an alternative source of income was indicated to be one viable way to increase labor productivity, reduce poverty, and improve smallholder farmers' participation. The findings show that modern AVCs usually shed participants or collapse because the smallholder farmers don't have any other constant source of income. So, the training and infrastructure should be provided for them to engage in the non-farming economic activities surrounding modern AVCs such as logistics. This is in consonance with Anang et al (2018) finding that argues in favor of non-farm employment stating "to enhance rural employment in off-farm activities, there is the need to promote rural industrialization such as the Government of Ghana's 'one district, one factory' policy initiative" which improve the income of smallholder farmers (Anang et al, 2018, p. 5).

One of the relevant findings in this study is about the spatial organization of farmlands in the region. It was found that for the smallholder farmers to be significantly productive the spatial organization of their farmland needs rethinking. Considering the efficiency of land use and the working are requirements of technologies in modern agriculture, reshaping the farmlands was found to be important. Reshaping of the farmlands into bigger units of land can increase production

while reducing risk and cost. As discussed in the result chapter in detail, a program run by WCDI in Ethiopia was the only relevant study found from the region which examined smallholder land productivity from the trends in farm size perspective. The adjacent small farmlands were merged to create larger tracts of land which is more suitable for mechanized agriculture. And the result shows that changes in the spatial organization of farmlands impact land productivity positively. However, it is important to understand that increased production alone is not enough. Smallholder farmers in East Africa need to organize to get better access to market and resource, but the underdeveloped modern AVCs have been a constraint.

Successful participation of smallholder farmers in modern agricultural value chains is considered an important step in improving food security and reducing poverty (Barrett et al., 2010; Mitchell et al., 2009). The findings in this study show that smallholder farmers' participation in modern AVCs has a positive effect on agricultural land productivity. And considering the fertile land in the region, the modern AVCs can provide the farmers with much-needed access to market, technology, information, and investment to boost land productivity. The modern AVCs can facilitate the reshaping of the spatial organization of the farmlands. Moreover, modern AVCs can also give the smallholder farmers incentive to produce more by improving their land management practice. While the right level of governance in modern AVCs can have a positive effect on land productivity and land management practice in the region.

Sub research question 2: “What is the bargaining power of smallholder farmers in modern AVCs in East Africa?”

This question was answered using “Degree of explicit coordination” and “Degree of power asymmetry”, variables which are adopted from Gereffi et al (2005). Based on these variables the study was able to identify the dominant type of governance and the bargaining power of stakeholders in the modern AVCs in East Africa, and how this influences the productivity of the smallholder farmers.

In the study, it was found that there are differences in how value chains are governed based on the agricultural sector and country. Sectors such as horticulture have relatively more balanced power dynamics between smallholder farmers and other stakeholders in the modern AVC in the region. Whereas in the crop sector the smallholder farmers have the least power in the modern AVC. But this is a generalization based on the dominant form of power asymmetry in the sector. It should be clear that there are few modern AVCs that managed to create a system where all stakeholders have a voice. On the other hand, governments in the region have varying degrees of interest and involvement, which affects the power asymmetry. Considering these contexts in the region the study was able to categorize the dominant type of modern crop value chain governance in the region and discuss how it affects land productivity.

The smallholder farmers in the region have limited capacity to produce surplus products that are competitive in the market. Due to this, they don't have a say in the conditions of transactions, and they take whatever price they are given. Moreover, the industries put a set of requirements on the quality and quantity of products they need from the smallholder farmer. And some industries also

give the farmers technical assistance and credit. These make the smallholder farmers dependent on the industries for a market. This supports an argument made by Amanor (2019) which states “integration into agribusiness value chains intensifies the loss of autonomy of farmers and makes them increasingly dependent upon inputs, proprietary seeds, and the regulation of production by agribusiness and loss of control over processing and marketing” (Amanor, 2019, p. 31). Furthermore, the interaction between the smallholder farmers and the industries in the crop value chain are dominantly informal. These aggravates the uncertainty and risks in the value chain systems for all stakeholders, but mainly for the smallholder farmers whose livelihood depends solely on this system.

looking at these findings, the characteristics of the value chain in the region align with the type of value chain governance Gereffi et al (2005) described as ‘captive’. According to their paper, captive value chain governance is created when the suppliers have low capacity and they depend on the buyer for transactions. This leads to a high degree of control and monitoring by the buyer. However, it should be clear that this is not to say the buyers in the modern AVCs are the source of the problem in East Africa. As was seen in the result chapter, the industries in modern AVCs also lose their investments due to the failure of smallholder farmers to supply the needed quality and quantity of products. Not only that the credits they give to the smallholder farmers as an advance payment do not always return, and often the value chains collapse.

In the modern AVCs where captive value chain governance worked, it was found that the value chains are short, simple, and only has very few numbers of participants. This success could be due to the relatively easy access to stakeholders to communicate, collaborate, and manage face to face. Other studies such as Gereffi (2003) and Bair (2008) indicated that modern market-oriented chains tend to be short (few actors) as the intermediaries become nonessential due to the direct trading between producers and traders. Conversely, large scale, and complex AVCs were found to be less successful. This supports the study by Foster and Rosenzweig (2010), where they discussed the routine subjection of AVCs to shedding and collapsing whenever there is a large number of smallholder farmers participating. The findings in this thesis indicate that the collapse of modern AVCs was found to usually start by the smallholder farmers leaving, but there are instances where industries left the modern AVC for a better opportunity.

Another point highlighted by the respondent in this study was the need for regional modern AVC market linkages. It was indicated that due to the poor modern AVC market linkage between the countries in the region, the opportunity it has is not utilized. A study by De Melo and Anna (2020) shows that East Africa has increased its integration into the global value chain system since 1990 through export-oriented modern AVCs, but its integration into the regional value chain system has seen little change. Moreover, when establishing modern AVCs local and international organizations “tend to focus their interventions in value chains or market systems on increasing competitiveness, performance, and on providing effective technologies to smallholder producers” (Dietz, 2011, p. 1). Dietz (2011) argued that governance doesn’t get the necessary attention despite it being an important factor in AVCs. This aligns with the finding in this study that indicates governments in East Africa focus on bringing together the smallholder farmers and the industries in a modern AVC and neglect the level of collaboration needed. Therefore, East African countries

have a lot of work to do in setting the governance in their modern AVCs and establishing suitable market linkages amongst themselves. The regional modern AVC integration in Europe and other parts of the world were indicated to be good examples by the respondents.

Overall, the theme in this study about the existing modern AVC governance is that captive value chain governance does not give room for maneuver smallholder farmers' needs in the region. The farmers cannot easily comply with the strict requirements of the industries. Considering their livelihood which is mostly from hand to mouth, they usually side sell or completely leave the value chain. Such a system is not working for both actors, and the productive potential of the land is not being utilized. The smallholder farmers are not able to improve their livelihood by participating in a modern AVC; and the industries are not getting the input supply they need. Thus, the crop productivity of the smallholder farmers could not improve significantly despite the continuous investment of national and international organizations to create modern AVCs. Considering the important role modern AVCs can play in enabling the East Africa smallholder farmers to efficiently utilize their farmland, the right level of governance should be set.

5.2. Methodological reflection

The results of this thesis should be seen in light of some limitations. Considering the specific methodology used and the choices made throughout the study, the influence it had on the study should be clarified. Therefore, this section will reflect on the methodological approach of the study.

The study was conducted using the East African region as a case study area, and the crops sector in general. This means the findings cannot be adopted in any other region globally. Depending on the geographic location, regional soil characteristics, and other relevant reasons the impact land has on farmers' productivity can vary. So, the credibility of the study is the highest in the context of East Africa.

The main limitation of this study was the source of data which is explained in the data collection method section of the methodology. The significant alteration of the source of data from multiple stakeholders into only experts limited the deeper insight the author could have. Moreover, data from multiple stakeholders could have brought diverse perspectives on the topic. Another limitation with data source was finding up to date and regional [East Africa focused] documents for analysis. This made it difficult to make specific claims about some of the findings in the study. Also, the current global changes taking place due to the pandemic could have significant implications on the topic but reliable documents were not found.

The global pandemic also affected the number of respondents for the interviews. If the data could be collected from a greater number of experts the perspectives would have been wider. Since most of the interviewees came from the snowball sampling used the experts are from a similar network of people. This might have also affected the result considering they might have a similar perspective. Besides this, the participation of more spatial planners who have expertise in the study area could have strengthened the insight on land productivity, and spatial organization of farmland.

Another challenge is the theoretical framework used in this study. I could have missed more relevant concepts to study land productivity which could affect the results differently. The concepts and variables used are the best possible option that I was able to find. The “cropland area” variable couldn’t indicate the shape of the farmlands compressively. This was challenging when linking the conceptual framework to some of the answers the respondents gave about the effect of the spatial organization of the land and how it affects productivity. If a concept that can examine the shapes of the farmlands was used the results could be more explicit. Furthermore, the choice to use “crop production” might have impacted the result differently. An expert I contacted for an interview was not willing to interview unless specific cereal from the crop value chains in the study area is selected instead of the general term “crop production”. He explained that he is an expert only in specific crop products.



CHAPTER SIX: CONCLUSION

6. Conclusion

Smallholder farmers play a key role in East Africa's food production and agricultural land utilization. Therefore, the trends in their productivity have a significant implication on the economy of the region. Due to this, countries in East Africa are using modern AVCs as one of the tools to boost their agricultural productivity. However, the participation of smallholder farmers in modern AVCs is not able to achieve the expected productivity.

Throughout the process, this study aimed to examine the impact smallholder farmer's participation in modern AVC can have on their land productivity in the context of East Africa. This was framed from the perspective of land productivity and collaboration. And exploring the smallholder farmers' agricultural land productivity and their power dynamics with the other stakeholders in the modern AVCs in the region revealed many insights that can expand and contribute to scientific knowledge. This section will present the most important findings in the study and answer the main research question which is:

How is the participation of smallholder farmers in modern AVCs in East Africa influencing their land productivity?

The findings in this study show that the existing spatial organization of farmland coupled with the obsolete land management practice is preventing the smallholder farmers in the region from achieving their food production potential. The focus given by local and international organizations on the intensification of farmland productivity does not guarantee the future of the region's food security. Considering the decreasing trend in smallholder farmers' farmland size intensification of existing plots is counterproductive. And the decrease in farmland size is expected to continue with the increasing rural population. Considering this and the smallholder farmers' lack of capacity to transform their land management practice, systems such as modern AVCs can facilitate the transition to modern land management practices.

The study was also able to find that the participation of smallholder farmers in modern AVCs has a positive effect on their productivity. This aligns with the literature that argues integration of smallholder farmers in agricultural value chains is an important step in improving food security and reduce poverty (Barrett et al., 2010; Mitchell et al., 2009). In this study, different cases throughout East Africa were discussed to show how modern AVCs were able to collaborate with smallholder farmers. And the results show that while some collaboration managed to perform well, most either underperform or completely collapse. The study also found that the collaboration between smallholder farmers and industries in modern AVCs in the region is seen as easy by governments; and bringing both stakeholders together would be enough. However, creating a functional collaboration system is complex and difficult; and this was seen in many East African country's unsuccessful efforts to create modern AVCs.

The study showed that a well-built modern AVC system can boost the capacity of the smallholder farmers through improved access to market, technology, and other quality inputs. This supports Taylor and Adelman's (2003) argument that the participation of the smallholder farmers in the market opportunities is assumed to improve welfare and their utility. Moreover, the study indicated that the current unproductive collaboration of modern AVCs and smallholder farmers in the region

is due to the mismatch of their linkage and poor land management practices. It also shows establishing the right level of governance in modern AVCs, and reshaping the special organization of farmlands can improve their productivity. However, experts such as Amanor (2019) argue that when transnational corporations get involved in such value chains the future of the smallholder farmers becomes grim. He stresses the point that value chains such as modern AVCs “are the product of a political process of incorporation into the world economy, which has created poverty, and have reshaped the agrarian economy to produce cheap commodities for Europe” (Amanor, 2019, p. 34). His arguments have a valid point, as the findings show in East Africa farmlands are not the only source of livelihood through production, they also provide social protection as an owner of the land. But it should be clear that the existing agricultural system in East Africa is not able to sustain its population, and the adoption of a modern AVC system is one of the few practical options. The concern about big companies monopolizing the market or land grabbing is one aspect where the type of governance created in the modern AVCs in East Africa should work to address.

Overall, from the perspective of land productivity and collaboration, it was found that modern AVCs enable smallholder farmers to utilize their farmland better if the right level of governance is created. The main advantage of the participating being that the incentives smallholder farmers get to engage in better land management practice. Intertwined with this is the collaboration perspective; which shows that the right level of collaboration between smallholder farmers and other stakeholders creates modern AVC systems that can enable better utilization of agricultural land. However, currently, the smallholder farmers in the region are facing underdeveloped modern AVC systems, obsolete land management practices, and a captive value chain governance system. These coupled with other global and regional constraints the smallholder farmers’ current and future food insecurity seems to be getting worse.

6.1. Recommendations for further research

One of the interesting topics that were found in this study is the importance of the spatial organization of agricultural land and how it is linked to smallholder farmers’ productivity. As some of the interviewees discussed, the spatial organization of farmlands plays an important role in East Africa. As presented in the result chapter, changing the spatial organization of the farmland to create an economy of scale was found to have a positive result in Ethiopia. However, the study topic needs in-depth research in a wider study area to see how it can affect regional food production. Moreover, the variables used from the conceptual framework were found to have a limitation on measuring the spatial organization of the farmlands. So, it should be examined using more comprehensive measurements.

The collaboration between smallholder farmers and industries was found to have constraints. And considering the importance of how collaboration affects the performance of stakeholders in modern AVCs; it should be studied properly. Further research can look into the right level of collaboration that works for all stakeholders in the modern AVCs. Considering this study was conducted under a readjusted methodological process, the result might be affected. So, further studies on the topic using rich data from multiple stakeholders gathered from the study area could

influence the result. The smallholder farmers and other actors in modern AVCs might have a different perspective on the topic.

An important factor that was not examined in this study that plays a vital role in the region is the local and regional agricultural development policies. Even though it was mentioned in the findings that it affects how modern AVCs function, deeper insight was found. This and the fact that some researchers have made arguments against global value chains (GVC)⁶ saying that they use value chains such as modern AVCs in developing countries as a tool to monopolize the market, and transfer cheap resources to developed countries show the importance of the issue.

6.2. Recommendations for society

One of the important insights that can be recommended from this study is creating a linkage between modern AVCs regionally. Despite the figures being different from country to country East Africa's common challenge is food insecurity. However, considering the overall food production potential the region has, it is important to see the challenges and opportunities at a bigger scale. Similar to the EU and other regional food systems, the countries should work together to create better agricultural trade policies and infrastructures. This can improve access to food and reduce the impact of food shortage in the region. The potential of regional infrastructure can be seen in the August 2020 report from the Port of Rotterdam. The report talks about the first shipment of avocados from Ethiopia to Europe via the Dutch Cold Chain⁷. This was achieved due to the cross country logistics investment made by Djibouti and Ethiopia with expert help from the Netherlands. Even though this is intercontinental linkage such infrastructures can make it possible for the region to trade agricultural products efficiently.

If countries and organizations want to significantly improve the livelihood of smallholder farmers in East Africa, they have to be willing to transform the system. Helping them to produce more in the piece of land they have is not future proof. Considering the current food insecurity and future challenges to come, solving this challenge requires focusing on the main need of the smallholder farmers. Creating alternative income for the smallholder farmers from non-farming activities should be explored further. They should be seen as more than just farmers who can only cultivate their land. The alternative income has multiple advantages for them such as having access to food during low production, reduce the full dependence on the income from the buyer, reduce side selling, and leaving the modern AVCs. There are already existing but very limited cultures of secondary non-farm income. For example, in Ethiopia, smallholder farmers make and sell traditional household utensils when they urgently need money. This could be a starting point for

⁶ **Global value chains** (GVCs): refer to “international production sharing, a phenomenon where production is broken into activities and tasks carried out in different countries” (UNIDO, 2019).

⁷ Cold Chain Cluster seeks to assist GCC eligible counterparts in the design, built and operations of fresh produce distribution centers, packing houses, auctions, wholesale markets and related infrastructure.

governments to study and plan for future economic activities that can employ smallholder farmers. Related to this is the rapid urbanization in East Africa which is usually seen as a challenge for agriculture and rural livelihood. Considering the ever-increasing rural population and rural-urban migration, urban areas should be seen as opportunities for service and market where smallholder farmers can utilize. Well placed modern AVCs can collaborate with the smallholder farmer, provide employment for the young, and create better market access by linking them to the consumers in urban areas.

REFERENCES

Reference of literature

- ADB. (2019). *East Africa Economic Outlook 2019: Macroeconomic developments and prospects*.
- Anang, Benjamin Tetteh, and Richard W. N. Yeboah. 2019. "Determinants of Off-Farm Income among Smallholder Rice Farmers in Northern Ghana: Application of a Double-Hurdle Model." *Advances in Agriculture* 2019:1–7.
- Alemu, M. M. (2016). Sustainable Land Management. *Journal of Environmental Protection*, 07(04), 502–506. <https://doi.org/10.4236/jep.2016.74045>
- Amanor, Kojo S. 2019. "Global Value Chains and Agribusiness in Africa: Upgrading or Capturing Smallholder Production?" *Agrarian South: Journal of Political Economy* 1–34.
- Barrett, C. B., Bachke, M. E., Bellemare, M. F., Michelson, H. C., Narayanan, S., & Walker, T. F. (2010). *Munich Personal RePEc Archive Smallholder Participation in Agricultural Value Chains: Comparative Evidence from Three Continents Smallholder Participation in Agricultural Value Chains: Comparative Evidence from Three Continents*.
- Barrett, C. B., Bachke, M. E., Bellemare, M. F., Michelson, H. C., Narayanan, S., & Walker, T. F. (2012). Smallholder participation in contract farming: Comparative evidence from five countries. *World Development*, 40(4), 715–730. <https://doi.org/10.1016/j.worlddev.2011.09.006>
- Barrios, E. (2007). Soil biota, ecosystem services and land productivity. *Ecological Economics*, 64(2), 269–285. <https://doi.org/10.1016/j.ecolecon.2007.03.004>
- Bayrau, A., Gebreeyesus, M., Abebe, G., & Aseffa, B. (2017). *A Study on Industrial Park Development : Issues , Practices and Lessons for Ethiopia* (Issue February).
- Brett, E. A. (2003). Participation and accountability in development management. *Journal of Development Studies*, 40(2), 1–29. <https://doi.org/10.1080/00220380412331293747>
- Creswell, J. W. (2014). *Research Design* (4th ed.). Sage Publications.
- Desiere, S., & Jolliffe, D. (2018). Land productivity and plot size: Is measurement error driving the inverse relationship? *Journal of Development Economics*, 130(October 2017), 84–98. <https://doi.org/10.1016/j.jdeveco.2017.10.002>
- Devers, K. J., & Frankel, R. M. (2000). Study design in Qualitative research - 2: Sampling and data collection strategies. *Education for Health*, 13(2), 263–271. <https://doi.org/10.1080/13576280050074543>
- Dietz, Martin. 2011. "Value Chain Governance That Benefits the Poor." 1–15.

FAO. *The Economic Lives of Smallholder Farmers An Analysis Based on Household Data from Nine Countries*. FAO, 2015.

- Flyvbjerg, B. (2011). Case study. In Norman K. Denzin & Yvonna S. Lincoln (Eds.). *The Sage Handbook of Qualitative Research*, 4, 301–316.
- Frank, E., Eakin, H., & López-Carr, D. (2011). Social identity, perception and motivation in adaptation to climate risk in the coffee sector of Chiapas, Mexico. *Global Environmental Change*, 21(1), 66–76. <https://doi.org/10.1016/j.gloenvcha.2010.11.001>
- Gassner, A., Harris, D., Mausch, K., Terheggen, A., Lopes, C., Finlayson, R. F., & Dobie, P. (2019). Poverty eradication and food security through agriculture in Africa: Rethinking objectives and entry points. *Outlook on Agriculture*, 48(4), 309–315. <https://doi.org/10.1177/0030727019888513>
- GEF. (2016). *Sustainable Land Management and Its Relationship To Global Environmental Benefits and Food Security – a Synthesis Report for the Gef*. 1–9. https://www.thegef.org/sites/default/files/council-meeting-documents/EN_GEF.STAP_C.50.Inf_03_SLM_GEBs_and_Food_Security_0.pdf
- Gereffi, G., Humphrey, J., & Sturgeon, T. (2005). The governance of global value chains. *Review of International Political Economy*, 12(1), 78–104. <https://doi.org/10.1080/09692290500049805>
- Gibbon, P., J. Bair, and S. Ponte. 2008. Governing Global Value Chains: An Introduction. *Economy and Society* 37(3): 315–338.
- Gollin, D. (2018). *IFAD RESEARCH SERIES 34 - Farm size and productivity: Lessons from recent literature*.
- Gourlay, S., Kilic, T., & Lobell, D. (2017). Could the Debate Be Over? Errors in Farmer-Reported Production and Their Implications for the Inverse Scale-Productivity Relationship in Uganda. *Development Economics*, September, 76. <https://openknowledge.worldbank.org/handle/10986/28369>
- Granat., G. Fischer. M. Makowski. J. (1999). AEZWIN An interactive multiple-criteria analysis tool for land resources appraisal. *International Institute for Applied Systems Analysis*, 101.
- Jakhar, Dan & Devesh, Pavan & ., Ashutosh & Kumar, S. (2018). *A brief review on sustainable land management*. July, 0–4.
- Jayne, T. S., Mather, D., & Mghenyi, E. (2010). Principal Challenges Confronting Smallholder Agriculture in Sub-Saharan Africa. *World Development*, 38(10), 1384–1398. <https://doi.org/10.1016/j.worlddev.2010.06.002>
- JYOTISHI, S. SIVRAMKRISHNA. A. (2008). MONOPSONISTIC EXPLOITATION IN CONTRACT FARMING: ARTICULATING A STRATEGY FOR GROWER COOPERATION. *Journal of International Development*, 17. <https://doi.org/10.1002/jid.1411>
- Kgosiemang, D. T., & Oladele, O. I. (2015). Factors Affecting Farmers ' Participation in Agricultural Projects in Mkhondo Municipality of Mpumalanga Province , South Africa Factors Affecting Farmers ' Participation in Agricultural Projects in Mkhondo Municipality of Mpumalanga Province , South Afri. *Journal of Human Ecology*, January 2012. <https://doi.org/10.1080/09709274.2012.11906445>

-
- KIT, F. M. and I. (2006). *Chain empowerment: Supporting African farmers to develop markets*. Royal Tropical Institute, Amsterdam; Faida Market Link, Arusha; and International Institute of Rural Reconstruction, Nairobi.
- Koch, A., Mcbratney, A., Adams, M., Field, D., Hill, R., Crawford, J., Minasny, B., Abbott, L., Donnell, A. O., Baldock, J., Barbier, E., Binkley, D., Parton, W., Wall, D. H., Bird, M., Bouma, J., Chenu, C., Flora, C. B., Goulding, K., ... Zimmermann, M. (2013). *Soil Security : Solving the Global Soil Crisis*. 4(4), 434–441. <https://doi.org/10.1111/1758-5899.12096>
- Kumar., R. (2019). *Research methodology : a step-by-step guide for beginners*. London ; Thousand Oaks, California : SAGE, [2019].
- Liniger, H.P., Mekdaschi Studer, R., Hauert, C., & Gurtner, M. (2011). Sustainable Land Management in Practice – Guidelines and best Practices for Sub-Saharan Africa. *TerrAfrica, World Overview of Conservation Approaches and Technologies (WOCAT) and Food and Agriculture Organization of the United Nations (FAO)*.
- Lowder, S. K., Scoet, J., & Raney, T. (2016). The Number, Size, and Distribution of Farms, Smallholder Farms, and Family Farms Worldwide. *World Development*, 87, 16–29. <https://doi.org/10.1016/j.worlddev.2015.10.041>
- Madzivhandila, T., Sibanda, S., Wambo Yamdjeu, A., Moalosi, K., & Gwelo, F. A. (2016). Achieving Food Security and Nutrition. *Africa Agriculture Status Report 2016*, 234–251.
- Mitchell, J., Keane, J., & Coles, C. (2009). *Trading Up : How a Value Chain Approach Can Benefit the Rural Poor*. NEPAD. (2013). *African agriculture, transformation and outlook*.
- PwC. (2018). *Invest Africa Regional Study Planning , financing and managing industrial parks in sub-Saharan Africa*. November.
- Rowley, J. (2002). Using case studies in research. *Management Research News*, 25(1), 16–27. <https://doi.org/10.1108/01409170210782990>
- Salami, A., Kamara, A. B., & Brixiova, Z. (2010). Smallholder Agriculture in East Africa: Trends, Constraints and Opportunities. *Working Paper No.105 African Development Bank*, April, 52. <https://doi.org/10.1111/j.1467-937X.2007.00447.x>
- Smid, K. (2018). *the Influence of Decentralized Spatial- Heritage Policies on the Development of Large-Scale Heritage Structures*.
- Solomon, D., Radeny, M., Mungai, C., Recha, J., Schuetz, T., Gadeberg, M., Solomon, D., Radeny, M., Mungai, C., Gadeberg, M., Dougherty, M., & Ciat, N. P. (2018). *CCAFS East Africa 2019 – 2021: Strategy for Supporting Agricultural Transformation, Food and Nutrition Security under Climate Change*. 36.
- Taylor, J. E., & Adelman, I. (2003). Agricultural Household Models: Genesis, Evolution, and Extensions. *Review of Economics of the Household*, 1(1/2), 33–58. <https://doi.org/10.1023/A:1021847430758>
- Teixeira, R., Koufteros, X., & Peng, X. D. (2012). Organizational Structure, Integration, and Manufacturing Performance: a Conceptual Model and Propositions. *Journal of Operations and Supply Chain Management*, 5(1), 70. <https://doi.org/10.12660/joscmv5n1p70-81>

The World Bank Group. (2015). *Ending Poverty and Hunger by 2030*. 30.

UNCTAD. “Chapter 2 - TRANSNATIONAL CORPORATIONS, AGRICULTURAL PRODUCTION AND DEVELOPMENT - World Investment Report.” *World Investment Report*, 2009, worldinvestmentreport.unctad.org/wir2009/chapter-2-transnational-corporations-agricultural-production-and-development/.

UNIDO. “What Are Global Value Chains and Why Do They Matter? | Industrial Analytics Platform.” *Industrial Analytics Platform*, 3 Aug. 2019, iap.unido.org/articles/what-are-global-value-chains-and-why-do-they-matter. Accessed 2020.

Wiggins, S., Kirsten, J., & Llambí, L. (2010). The Future of Small Farms. *World Development*, 38(10), 1341–1348. <https://doi.org/10.1016/j.worlddev.2009.06.013>

Woldemichael, A., Salami, A., Mukasa, A., Simpasa, A., & Shimeles, A. (2017). Transforming Africa’s Agriculture through Agro-Industrialization. *Africa Economic Brief*, 8(7), 1–12. https://www.afdb.org/fileadmin/uploads/afdb/Documents/Publications/AEB_Volume_8_Issue_7_Transforming_Africa_s_Agriculture_through_Agro-Industrialization_B.pdf

Woodfine, a. (2009). Using sustainable land management practices to adapt to and mitigate climate change in sub-Saharan Africa: Resource Guide Version 1.0. *TerrAfrica, Regional Sustainable Land Management*, August, 0–78.

Yin., R. K. (2014). *Case study research : design and methods* (5th ed.). Thousand Oaks, CA : Sage Publications.

Reference of illustrations

CHAPTER COVER PAGE	DESCRIPTION	AUTHOR
COVER PAGE		Author
CHAPTER ONE: INTRODUCTION	A man attempts to fend-off a swarm of desert locusts at a ranch near the town on Nanyuki in Laikipia county, Kenya	Reuters, 2020
CHAPTER TWO: THEORETICAL FRAMEWORK	Irrigation, Ethiopia	Gebisa Ejeta, 2019
CHAPTER THREE: METHODOLOGY	Drought http://peastafrican-agrinenews.com 2017	Peastafrican-agrinenews.com, 2017
CHAPTER FOUR: RESULT	Integrated agro-industrial park, Ethiopia	Semonegna.com, 2019
CHAPTER FIVE: DISCUSSION	African-woman-in-traditional-clothes	Depositphotos, 2019
CHAPTER SIX: CONCLUSION	Sefed/Basket	Pinterest.com, 2020

APPENDICES

A. Interview Protocol Sheet

Hi, my name is Frezer. This interview is to gather data for my Land Use Planning Master Thesis at Wageningen University & Research. This study looks into the reason behind the challenge in smallholder farmers' productivity by examining the participation of smallholder farmers in modern agricultural value chains in East Africa; from the perspective of land productivity and collaboration. In this interview changes in crop yield and farm, size is used to examine land productivity. And the interaction between the smallholder farmers and industries in the AVCs, and the power dynamics between them is used to examine the collaboration aspect.

When I say modern AVCs, I am talking about value chains that are characterized by vertical coordination, consolidation of the supply base, agro-industrial processing, and use of standards throughout the chain (FAO, 2012). And the interview will be semi-structured so we can discuss the topic based on your expertise and experience. I would like to get your honest opinion based on your expertise in the question. Your response to the question will be used in the result and discussion of this thesis.

Before we start the interview.

-May I record this interview?

-Can you confirm your name and job title, please?

Introducing the background of the thesis and answering questions from the interviewee to set the stage for the discussion.

1. Introduction Questions

- 1.1. Are you familiar with smallholder farmers in East Africa?
- 1.2. Are you familiar with modern AVCs in East Africa?
- 1.3. In which countries in East Africa have you been to? For work or other reasons.
- 1.4. briefly describe your work experience in East Africa concerning the topic?

2. General Questions

- 2.1. what is the trend in smallholder farmers' crop productivity in East Africa?
- 2.2. What do you think are the main challenges hindering smallholder farmers from increasing their crop production in East Africa?

-
- 2.3. What is the trend in smallholder farmers' farmland size in East Africa?
 - 2.4. How do you see the relationship between smallholder farmers' farmland size and crop productivity?
 - 2.5. What implications does the spatial organization of the smallholder farmers' farmland have on their productivity?
 - 2.6. Do smallholder farmers in East Africa have bargaining power in the agricultural value chains?
 - 2.7. Who manages agricultural value chains in East Africa?
 - 2.8. How do you see the influence of industries [buyers, processor, or exporters] on the smallholder farmers' crop productivity in East Africa?
 - 2.9. How do smallholder farmers and the industries in the value chain system interact in the region?

3. Suggestion

Anyone you recommend me to contact for information regarding this topic? If yes, would you please give me their contact information?

4. Remark

Anything you would like to add before we finish the interview?

5. Closing

Thank you very much for your time and insights on the topic.