Challenges and Opportunities Shaping Smallholders' Engagement with Formal and Informal Markets for Food and Livelihood Security: A Rift Valley, Kenya Case Study Analysis

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Abstract

This case study analysis looks at four communities in Rift Valley, Kenya including Matisi, Moi's Bridge, Sirende and Waitaluk. The research focuses on the role of markets in achieving food and livelihood security for the smallholders in these communities and smallholders' perceptions of the roles of the Government of Kenya and other institutions in facilitating market access. The largest challenges to market participation, as reported by the smallholders in the studied communities, include low yields, weather inconsistencies, and lack of land. In terms of the Government of Kenya, many smallholders noted the benefits of participating in groups as they are subsequently offered training or field days and subsidies. A significant group of respondents did comment on their lack of interest in joining similar groups as they were seen as unstable or corrupt. The potential roles of formal and informal markets to increase food security were also analyzed. All smallholders wished to be participating in informal markets, but twenty-five percent were constrained by the lack of surplus produce. Similarly, although many reported their desire to be participants in formal markets lack of surplus produce, price fluctuations, inconsistent weather patterns, transportation costs and post- harvest losses or food waster were recognized as significant barriers. In order to mitigate these constraints, most smallholders recommended subsidies on inputs and the overall restructuring of markets. It is recommended that organizations and governments implement a livelihood diversification policy program or initiative to diversify and intensify agricultural activities and other non-agricultural activities. This case study analysis demonstrates the need to recognize the importance of local contexts, specifically Rift Valley as much of the research done in Kenya is found in Nairobi and surrounding areas and cautions labeling communities as food secure based on favorable conditions.

Key words: food security, informal, formal, markets, livelihood diversification

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List of Abbreviations

FAO- Food and Agriculture Organization
FFV- Fresh Fruit and Vegetables
GDP- Gross Domestic Product
GoK- Government of Kenya
IFAD- International Fund for Agricultural Development
IFPRI- International Food Policy Research Institute
KFSSG- Kenya Food Security Steering Group
KSh- Kenyan shilling
MDG- Millennium Development Goal
MoA- Ministry of Agriculture
NAPA- National Adaptation Programme of Action
NGO- Non-governmental organizations
SAP-Structural Adjustment Programs
SSA-Sub-Saharan Africa
UN- United Nations
USA- United States of America
USD- United States Dollar
WB- World Bank
WFP- World Food Programme
WFS- World Food Summit

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Chapter 1: An Introduction to Eldoret- Kitale Regional Case Study of Food Security and Policy Implications

1.1 Introduction to food security and the approaches used to achieve this end

In its most recent report, the Food and Agriculture Organization (FAO) estimates that there are 842 million people globally (or 12 percent of the world's population) unable to meet the necessary dietary energy requirements (FAO, 2013). The majority of these food insecure populations, approximately 827 million, live in developing regions (FAO, 2013). More specifically, Africa remains the region with the highest number of food insecure people, with estimates of one in four people being undernourished (FAO, 2013). Although Sub- Saharan Africa (SSA) does have the highest prevalence of undernourishment, there have been some improvements over the last two decades with percentages declining from 32.7 to 24.8 percent (FAO, 2013). Efforts from the development community have helped to improve this prevalence; yet, there is still recognition of the need to reduce hunger. Two targets where established (in the development community) to help achieve this end. The first by the World Food Summit (1996) is to halve the number of hungry people, and the other is the Millennium Development Goal (2001) that seeks to halve the proportion of hungry people (FAO, 1996; FAO-UN, 2014). Although these development goals may be attainable (this is arguable), SSA is not on track to meet its MDG food security goal (FAO, 2013).

Populations who are undernourished continue to exist and are prevalent in SSA, and thus, food security and ensuring vulnerable populations are food secure has been on the development agenda for decades. Upon recognition of the importance and emphasis on food security, numerous governments and donor agencies have placed support and

finances in various efforts to achieve this end. For example, food aid is often available in states of emergencies as are other more stable and persistent policies such as social safety nets, school feedings, capacity training and other strategies to improve agricultural productivity and consequently food security in developing countries (Canada, 2009). As the MDG development goals are coming to an end, the new agenda (named post-2015) continues to have a focus on the elimination of hungry populations, to continue the efforts of the MDG's in regions (such as SSA) that have been unable to attain this goal (FAO-UN, 2014; FAO, 2013). This demonstrates two things; first, the goal of reducing either the entire population (WFS) or the proportion of hungry people (MDG) was not entirely achieved in all regions during the past fifteen years and second, ensuring food secure populations is still seen as imperative to development.

The question remains as to how developing countries, unarguably with assistance, can achieve the status of food security and what the 'food secure' label entails (e.g. how is it evaluated). The decline in food insecure populations since the launch of the MDG's as represented by the Global Hunger Index does illustrate the effectiveness of some programs and initiatives with an objective of decreasing food insecure populations. The Global Hunger Index, funded by IFPRI, tracks and measures the level of hunger at the country, regional and world levels (von Grebmer et al., 2013). Since the 1990s, the Global Hunger Index shows that the number of people globally experiencing hunger has fallen by one third, from 1990 to 2012 (von Grebmer et al., 2013). Yet, food insecurity still exists and is still quite widespread across numerous developing countries, and most definitely within SSA. The second part of determining food secure populations relies on how a person can be deemed food secure, as an estimated 842 million people (according

to the FAO) are currently suffering from hunger, as mentioned above (FAO, 2013). The Rome Declaration (FAO, 1996) that came out of the 1996 WFS provided the widely-used definition of food security as existing "when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life" (FAO, 1996). However, there are factors beyond this conceptualization that should be accounted for, which includes integrating the opinions and perspectives of smallholders, beyond scientific and measurable factors, to determine food security in a given region.

An example, and a focus of this research, is on the smaller rural communities surrounding Eldoret and Kitale in Rift Valley, Kenya. Generally speaking, Rift Valley is labeled as one of the more food secure provinces within Kenya (IFPRI, 2012). Contributing factors to this label include its relatively prosperous economy, its favorable climate, abundant arable land, and high agricultural potential (IFAD, 2011; IFPRI, 2012). This research investigates this generalization by conducting forty-nine interviews with smallholders in four communities. This research will seek to understand if these populations are in fact food secure, primarily through their interactions with markets, and if this general claim concerning food secure populations in Rift Valley stands. Beyond challenging the claim that Rift Valley populations are (or are not) food secure, this research also seeks to address how smallholders can engage with markets in order to stimulate rural development in Kenya.

1.2 Research Questions

As above mentioned, this case study of smallholders in rural areas surrounding Eldoret and Kitale will formally analyze the role of smallholders in these regions and their perspectives on informal and formal markets and their influence on food security

and rural livelihoods. To date, flagging indicators such as little conflict or the availability (and accessibility) of productive land tends to presume a food secure population in developing regions. However, this is not sufficient evidence to demonstrate and concretely conclude the food or overall livelihood security of these populations. A secondary consideration, fundamental to this analysis, is the role of livelihood diversification in overcoming these challenges, from the perspectives of the smallholders in these communities. Here livelihood diversification, for the purpose of this research, can be used in two different and distinct ways. First is the broadening of crop production, from staples such as maize to more fresh fruit and vegetables. Second, this research focuses on the need for livelihood diversification where farming is just one of the income generating activities the family relies on (Ellis, 2000).

This research attempts to explain the contradictions between the dominant image of Rift Valley (as high agricultural potential and relatively food secure) and the perspectives of smallholders who live within it, looking at their opportunities for interactions with formal and informal markets and for livelihood diversification, in both senses as outlined above. The specific research question, as will be applied in Chapter 3, is what are the roles of markets, formal and informal, in attaining food security from Rift Valley smallholders' perspective? The relevant sub-questions that will also be discussed include: what role do governments' and non-governmental institutions play in the facilitation of market access of rural communities in Rift Valley; and what are the policy recommendations smallholders in Rift Valley perceive as imperative to increasing market accessibility and how can they be implemented.

1.3 Justification of a contextual, first hand approach to addressing food security

In more recent years, the development agenda (most notably Baro and Deubel, 2006) has strongly advocated for a contextual approach to development. As such, directly addressing and involving smallholders and vulnerable populations is seen as critical in maintaining a level of sustainable food security. One factor in determining the food security of populations is the involvement of smallholders (and their levels of participation) in markets, both formal and informal, in selling fresh fruit and vegetables- henceforth known as FFV[1]. Recognizing the role of markets as fundamental to food secure populations (be it formal or informal), there is an abundance of literature that critically describes the challenges Kenyan small-scale farmers face when entering these markets. The accessibility and availability of these markets is often used as a key characteristic to indicate that populations are food secure as selling produce to markets increases incomes (and plausibly food security) as well as having accessibility to diversified FFV.

In order to better understand the dimension of markets and its inherent effects on food security, more specifically looking at formal markets in SSA, it is imperative to understand that the rapid expansion of supermarkets, most significantly across developing countries in Africa including Kenya, has had noticeable effects. As such, similar to the literature on the role of markets in developing countries, there is growing literature conceptualizing the effects of these markets on labor markets, procurement standards and livelihoods as a whole (Omamo, 1998; Reardon et al., 2004; Reardon et al.,

[1] For the purpose and scope of this research, market accessibility was the factor chosen in determining food security of selected rural populations in Rift Valley. There are, recognizably, a number of other determining factors and indicators to achieving food security. However, this goes beyond the scope and purpose of this paper.

2009; Neven & Reardon, 2003). This research clearly demonstrates that small-scale farmers across SSA are facing numerous challenges to engaging with supermarkets and their networks. Undeniably, as accessibility and availability of markets, for this research, help to characterize a higher likelihood of food secure populations, these constraints may be costly. Yet, an in-depth analysis of how small-scale farmers themselves perceive these obstacles, techniques to overcome them as well as potential opportunities appears to be missing within the existing literature (Hazell, 2005; Neven & Reardon, 2003; Rao & Qaim, 2010; Reardon et al., 2009; Reardon, Timmer & Berdegue, 2004). This research will take a firsthand approach and analyze a collection of interviews to determine which of these barriers exist in this region, how smallholders perceive them and what opportunities and constraints shape their ability to enter formal markets.

Beyond the market analysis, the objective of this research is to determine whether or not it is the case that smaller, rural communities in Rift Valley are in fact food secure, as the Government of Kenya (GoK) identifies it. Most of the research in Kenya, to date, has focused on areas nearer to Nairobi (e.g. Central and Eastern Kenya) and not in Rift Valley (Maxwell, 1999; Mwangi, 1995; Omamo, 1998). Regardless of the outcomes, based solely on the perspectives of the smallholders living in these rural areas, there are policy considerations that must be accounted for. These implications have the ability to have numerous effects on the development agenda as a whole, and are timely as the post-2015 development agenda (post-MDG era) is currently being discussed and will be the focus of donor agencies and other governments moving forward.

1.4 An overview

In order to address the research questions identified above, this paper will consider the theoretical framework necessary for such an approach, followed by the necessary

Kenya analysis (delving into more specifics on the area surrounding Eldoret and Kitale), the case study analysis (of the smallholders perspective) and finally the policy considerations that can be gleaned from this analysis and possibly implemented in future development agendas.

The first chapter discusses political ecology and the inherent relationship between actors and the power influences of this relationship as the overarching theoretical framework of this research. Addressing the environment, a key component to any agricultural development policy, initiative or strategy, is also highlighted. After grasping, with broad strokes, political ecology as the foundation for this research, emphasis is placed on livelihood diversification and the role of the GoK and other donor agencies in advocating for it. The third component of this theoretical framework is food security and the role of FFV in achieving food security. This will allow for a common ground when moving forward with this analysis.

Following the foundational framework of this research, Chapter three will be dedicated to describing the current food insecurity situation in Kenya as well as looking more specifically at the areas of interest for this research, including Rift Valley and even more so at rural communities between Eldoret and Kitale. Outlining the GoK and donor support, the role of the Kenyan agricultural economy and the prevalence of formal (e.g. supermarkets for the purpose of this research) and informal markets in Kenya is the focus for the remainder of this chapter. Although this chapter undoubtedly addresses Kenya as a whole, it also acknowledges the current situation in the rural areas surrounding Eldoret and Kitale, where this research takes place.

Chapter four provides an in-depth case study analysis of the smallholder perspectives on food and livelihood security in four rural communities that include Matisi, Moi's Bridge, Sirende and Waitaluk. This chapter will highlight key findings and provide a succinct analysis of smallholders' perspectives of different aspects of food and livelihood security in their communities.

Finally, based on these findings, Chapter five proposes policy interventions that could (and arguably should) be implemented in these regions to increase overall food security and within that livelihoods and overall agricultural productivity.

In sum, this research seeks to apply the perspectives of smallholders in Eldoret and Kitale (and their market involvement) to determine the food security situation for this local context. Although comparatively more time-consuming and costly, local and more contextualized approaches to specific development priorities (as opposed to generalized larger region conclusions) will further enable donor agencies and governments to distribute the appropriate tools and funding. Hence, a short-term conclusion clearly illustrates the need for more time and more money to conduct contextual approaches. Yet, the long-term results have the ability for smallholders in developing countries to become food secure and meet the MDG (or post-2015) goals that developed countries have set for them.

Chapter 2: Theoretical Framework and Analysis

This chapter identifies the importance of food secure populations and the constraints of meeting this goal in developing countries. By recognizing food security as a persistent problem, the role of smallholders and their ability to increase agricultural production and enter markets has a direct impact on food security. Thus, this chapter highlights the theoretical framework for the empirical research in Kenya. Applying this research through a political ecology lens correctly identifies the complex relationship between human actors as well as the environment and policy, all of which are relevant and significant to smallholders in SSA. Beyond political ecology, a livelihood diversification analysis is also important as it demonstrates the need for sustainable income and more secure livelihoods for smallholders in developing countries.

2.1 Food Security

Small-scale farmers engage with different markets while also attempting to meet their own food security needs. As such, it is important to define "food security" and to understand the various ways that the food security concept can explain livelihood vulnerability in Africa, especially Kenya. The current and most widely accepted definition of food security comes from the 1996 Rome Declaration, which identifies it as a situation that "exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life" (FAO, 1996: 3). It is important to note that this definition draws on the work of Amartya Sen (e.g. 1981) in distinguishing both the physical production of and economic (or indeed social) access to food. This definition, in coordination with Sen's paradigm shift in the early 1980s that highlighted issues on access and the entitlement of food, identifies the conventional view of food as a primary

need (Clover, 2003).

An important aspect of defining food security is the recognition of the relationship between smallholders, agriculture and food security. Food insecurity cannot be seen as the failure of agriculture to produce sufficient food for the national level or for export, rather it must also consider the failure of livelihoods to guarantee the access of food at the household level (Clover, 2003). Today it is common practice to recognize definitions beginning with individual entitlements and then progressing up the value chain to linkages between the individual, the household, the community, the nation and finally the international community (Maxwell & Devereux, 2001).

As a response to the prevalent food security problem, past food development strategies have focused on three factors including food supply, food demand and biological utilization of food concentrating on the role of small-scale farmers (Escobar, 2011). Interestingly, in terms of overall food supply, it remains the case that "…smallholders still produce most of Africa's food" (Altieri, 2009, p. 104). Smallholders are thus important to this study not just as the producers of food in the Kenyan context but also as a population whose livelihoods and food security status need to be ensured.

2.1.1 Overview of food (in) security in SSA, the role of smallholders and commercial farming

Although per capita agriculture production in SSA has been stagnant for over thirty years, it is useful to note that even if agricultural production has not kept pace with population increase it has nonetheless grown in SSA annually by between 2.3 percent in the 1980s to around 3.8 percent between 2000 and 2005 (Asenso-Okyere & Jemaneh, 2012; FAO, 2013). Unfortunately, the continuous agricultural growth in Africa has

largely occurred because of area expansion as opposed to increases in productivity due to technological advancement (FAO, 2005). Coupled with the fact that agricultural growth is rarely keeping pace with population expansion, and because many of the most productive areas in SSA have limited opportunities for further expansion of their cultivated areas, many people in SSA continue to be food insecure.

Acute food insecurity (in 2003) affected nearly 38 million people in SSA, with 24,000 people dying annually (Clover, 2003). Approximately 73 percent of the population in SSA still lives on less than 2 USD per day, with 28 percent of these people consuming inadequate calories and 24 percent being underweight (Asenso-Okyere & Jemaneh, 2012). Another startling statistic (according to the FAO) is that in 2010 there were 925 million hungry people in the world and it is estimated that 239 million of them were in SSA (Asenso-Okyere & Jemaneh, 2012). Based on these statistics, it is not surprising that SSA is now receiving most of the world's food aid, with approximately 30 million people requiring food aid in any one particular year (Clover, 2003).

There are numerous indicators and factors that scholars and analysts attribute to Africa's current food insecurity situation. Some factors to highlight include drought and adverse weather, conflict, and poor policy decision-making (Haile, 2005). Food insecurity will continue to be placed under stress in SSA from a complex web and dependence of factors including energy, finance, and the transformation of food and supply chains within a growing population (Haile, 2005). These different factors have extremely adverse effects on smallholders who are often already challenged with limited resources and insufficient access to different inputs, services and markets (FAO, 2012).

A focus on improving the stagnated agricultural sector of SSA will have the most significant impact on solving SSA's food insecurity problems since it is in and of itself the heart of food security (Asenso-Okyere & Jemaneh, 2012; Clover, 2003; FAO, 2005). In relation to other developing and developed regions in the world, agriculture is the most predominant in Africa- with smallholder agriculture being the source of many livelihoods (Hazell, 2005). Typically, agriculture employs the greatest number of people in the labor force (in developing countries) with over 96 percent of farmers in Africa operating on a small-scale level (Clover, 2003).

One of the implementation strategies used to improve agricultural productivity has been commercial farming. A decreased amount of African budgets spent on agriculture resulted in a higher concentration of ownership of land and resources into the hands of large-scale farmers (often commercial) who have more money or assets and who in turn focus more heavily on cash crops (Clover, 2003). However, for poorer developing counties who also tend to be land scarce, small farms still have several advantages over larger farms (Hazell, 2005). Some of the benefits include greater economic efficiency; more employment and consumption patterns which tend to encourage the rural nonfarm economy (Hazell, 2005).

The efficiency of these smallholder farms has been researched in numerous empirical studies where small farms are seen to achieve their higher productivity with lower capital intensities as opposed to larger farms (Eastwood et al., 2009; Hazell, 2005, Fan et al., 2013). Although smallholder farms may have been proved to be, at minimum, as efficient as large farms (although often the case when smallholders receive some type of support such as inputs like seeds or fertilizer), some still call into question this

efficiency (Helfand & Levine 2004; Barrett et al., 2010; Poulton et al., 2010). Regardless, the role of commercial farming is relevant in SSA, but there must also be a focus on smallholder farming as significant to ending food insecurity (and simultaneously poverty) in SSA. Strategies and policies to end food insecurity in SSA must include responses to issues such as land tenure rights, agricultural diversity, and access to inputs (e.g. seeds and fertilizer) both commercially and locally (Hazell, 2005).

2.2 Political Ecology

The appropriate analytical lens for this research will focus on the political ecology of food security, markets and rural development. The most widely accepted definition of political ecology comes from Blaikie and Brookfield (1987) who state:

> The phrase 'political ecology' combines the concerns of ecology and a broadly defined political economy. Together this encompasses the constantly shifting dialectic between society and land-based resources and also within classes and groups within society itself. (17)

From this definition, it is theoretically implied that ecological and social change needs to be understood as an outcome that emerges from different political and economic processes at local, national and international levels (Rangan & Hull, 2009). More so, a political ecology perspective continually seeks to understand and present the complex relations between nature and society through the accessibility and control over resources and the implications of these relationships for environmental health and the overall livelihood sustainability of different populations (Watts, 1992). In other words, a political ecology analysis is focused on power relationships. These power relations often determine smallholders' access to resources (natural or economic) (Bryant, 1992). In Kenya, the government is recognized as the most significant actor determining smallholders' access to resources. Although the GoK has the ability and the power to

increase smallholders' access to resources, or decrease barriers to attaining them, there is considerably more focus on urban areas and large commercial farms. This, arguably, represents the most significant barrier to smallholders, as those in power are doing little to assist them in increasing smallholders' agricultural productivity.

Beyond imperative power relations, one of the largest factors of political ecology in present day is globalization and the impacts of the integration of the global economy. As such, communities are being integrated into and transformed by the global economy (Peet & Watts, 2004). Although communities are beginning to be transformed, it is also important to signal the various options different communities may or may not have. For example, communities may resist integration or merely adapt. Furthermore, it is imperative to recognize that the local or regional economy and socio-cultural dynamics of a given community is key in either strengthening or weakening (by calling into question) the dominant, globalizing processes surrounding food production, distribution and consumption. Within this framework, there is local resource management as well as environmental regulations and stability of agrarian societies that must be considered (Peet & Watts, 2004). The significance and purpose of political ecology within this context is to provide the integration of land use practices with the local (and global) economy through a smallholders' perspective (Peet & Watts, 2004). In Kenya, smallholder farmers are typically interested and seeking engagement with global forces (e.g. markets); yet, their participation trends are unequal in comparison to those with larger land holdings or better access to services. For many, their interest in markets is one of survival (to make an income needed to subsist and survive) as opposed to making a profit. Yet political ecologists would indicate that such market engagement, while now a

necessity, is actually undermining both the economic and ecological viability of smallholders' livelihoods: with all farmers selling the same, low value commodities, only a few will ever be able to accumulate the resources needed to improve their situation (economic or food security) while the rest struggle to survive while steadily depleting their farms' natural capital.

A political ecology approach is appropriate for this research as it highlights the interplay and the relationship between different actors, politics and the environment. The role of the environment, through this political ecology lens, is two-fold in this research. First, the role of land and the ability of smallholder farmers to produce and cultivate enough food on their land, with their own labor, in order to be food secure is significant. The second notable environmental consideration is the possibility of land degradation, pollution, or loss of biodiversity. The loss of biodiversity is a concern as market pressures are driving, and arguably forcing, the homogenization of production systems creating a loss of agro-ecological knowledge. Land degradation and soil fertility depletion is an ongoing concern as often the same crops (as argued above) are growing continuously without adequate amounts of inputs (e.g. fertilizer or organic matter). However, the risks of pollution, most notably from machinery, are minimal as compared to the loss of biodiversity and land degradation and soil depletion (Gray and Dowd-Uribe, 2013). Highlighting the roles of smallholders, the GoK and development agencies, the power they have on markets as well as the effects and implications on the environment is precisely the engagement this research will demonstrate.

2.3 Livelihoods Analysis

A secondary analysis this research must consider is the role of livelihood diversification strategies. For the purpose of this research, a livelihood analysis needs to

be anchored at the household level (Niehof, 2004). The first most recognizable definition of livelihoods came from the World Commission on Environment and Development (1987: 2) where livelihoods are defined as the "adequate stocks and flow of food and cash to meet basic needs." However, this definition neglected to include how this flow of cash was to exist (Chambers, 1989). As a result, the definition of livelihoods has been revamped to the current most prevailing definition (Chambers & Conway, 1992):

> A livelihood comprises the assets (natural, physical, human, financial and social capital), the activities, and the access to these (mediated by institutions and social relations) that together determine the living gained by the individual or household. (6)

Another aspect of this framework is diversification (Ellis, 2000: 15), defined as "…the process by which rural households construct an increasingly diverse portfolio of activities and assets in order to survive and to improve their standard of living."

Although these are definitions of livelihood diversification, there are several implications and strategies devolved from this. For example, the concept of livelihood itself is not necessarily only confined to the economic activities but also includes non-economic attributes such as social relationships that are often mediated across different assets and income streams (Ellis, 2000). Furthermore, it is important to note that the participation of smallholders in multiple activities is not new or only confined to rural sectors or even developing countries, rather the concept of sustainable livelihoods as it relates to and encompasses a broad set of issues such as poverty and the environment has existed for decades in all regions (Ellis, 2000; Scoones, 1998). A final important definitional clarification for the remainder of this research is the distinction between non-farm (activities not in the agricultural sector) and off-farm (activities conducted outside of the household) (Barretta et al., 2001).

2.3.1 The purpose of diversification

Arguably, smallholders and households seek livelihood diversification in one of two ways, either by necessity or by choice or as framed by Ellis (1998) reactive or pro-active. Necessity refers to diversification that is involuntary and may be done for desperation reasons; examples include environmental degradation, ill health or civil war (Ellis, 2000). Commonly, necessity livelihood diversification is seen as "… a last resort rather than an attractive alternative livelihood" (Ghosh & Bharadwaj, 1992, p. 154). Another consideration when diversification is reactive is the (in)ability of the individual or households to make optimal choices, due either by the limited number of available options or the lack of time and resources need to choose well (Ellis, 1998). On the other hand, choice or pro-active diversification refers to diversification that is voluntary and represents a proactive way of diversifying; examples include educating children, saving money to invest in non-farm businesses or traveling to find work in other locations (Ellis, 2000). In this sense, diversification is seen as a type of self-insurance as it assures smallholders and their families increased income across various risk activities (Niehof, 2004).

2.3.2 Indicators, characteristics and challenges of a livelihoods analysis

After conceptualizing what livelihood diversification entails, it is essential to ground this theory in the different strategies and techniques within which diversification itself occurs. First and foremost, usually when there are discussions on the diversification of rural livelihoods, there tends to be an advocacy for on-farm changes in certain agricultural activities or the desirability to develop non-farm industries that are still rural based (Ellis, 2000). However, on-farm industries can only minimally diversify a smallholders' income. As a result, it is important to recognize, and go beyond perhaps

traditional on-farm approaches. For example, livelihood diversification in developing countries should not be characterized as small amounts of work for wages on neighboring farms, or as a part-time farming job with a more permanent wage with a non-farm activity (Ellis, 2000). Most rural smallholder families have multiple income sources that may include off-farm agriculture work, rural non-farm self-employment (e.g. trading) or even remittances from abroad (Ellis, 2000).

Arguably, one of the largest components for smallholders to participate in a livelihoods strategy is to increase their income during the off-season (Scoones, 1998). The motives for smallholders to participate in these activities include 'push factors' (e.g. risk reduction) or 'pull factors' (e.g. comparative advantage with a certain skill set) (Barretta et al., 2001). As a result, smallholders seek other forms of employment, be it non-farm or off-farm. The three most significant aspects of employment (Sen, 1975: 5) include (i) income (a wage for those who are employed), (ii) production (employment based off of output that can also be consumed); (iii) recognition (where one's employment is given recognition for participating in something worthwhile).

Aside from ensuring increased income, there are six common determinants of diversification. These include seasonality, as abovementioned, risk strategies, labor markets, credit market failures, asset strategies, and coping behaviors and adaptation techniques (Ellis, 2000). First, seasonality refers to the timing of activities as a critical aspect to diversification (Lindenberg, 2002). During growing season, there are high-income returns to agricultural labor, however this significantly decreases during non-growing season periods. As such, income variability can be drastic and diversification plays an imperative role in reducing this variability (Ellis, 2000). Second, smallholders

analyze the risks of a certain activity and diversify in order to anticipate the risks of one individual activity's failure (Alderman & Paxson, 1992). In doing so, smallholders must ensure that the risks for one economic activity are not the same risks for another (e.g. climate in farming or urban job insecurity in off- farm activities) (Ellis, 2000). Third, labor markets highlight varied work opportunities between skill sets, education levels and often gender in developing countries (Niehof, 2004; Davies & Hossain, 1997). Fourth, credit market failures constrain the funds and income for agricultural production, which becomes further exacerbated with poor functioning markets enticing smallholders to diversify (Hoff et al., 1993; Besley, 1995). Fifth, smallholders often create asset strategies or make investments in order to increase the income for future generations (Ellis, 2000). Finally, smallholders often have or have access to certain coping behaviors and adaptation mechanisms (e.g. livelihood diversification strategies as will be discussed below, social safety nets or crop diversification) to respond to unanticipated failures, a most common example is a natural disaster (Carter, 1997; Blaikie et al., 1994).

Individually or combined, these different indicators of livelihood diversification of smallholders clearly demonstrates how certain things have the possibility of negatively impacting incomes. By implementing certain strategies and taking steps to reach livelihood diversification in a household, there are less risks and higher incomes associated.

2.3.3 Livelihood diversification in SSA

Currently, livelihood diversification in SSA is quite pervasive. It is widespread and found in most locations, across different ranges of farm sizes and incomes (Ellis, 2000). The diversification trend is commonly identified as starting in the mid-1980s and early 1990s during the era of structural adjustment programs (SAPs) (Bryceson, 2002).

SAPs liberalized markets and negatively impacted Africa's industrial and agricultural sectors (Bryceson, 2002). Consequently, small-scale farmers were faced with larger and more uncertain market environments, drastic food price fluctuations and increasing costs of agricultural inputs (Bryceson, 2002). Hence, smallholders diversified into other crops but also non-agricultural activities as increased population pressures and the low value that is often placed on agricultural work "predisposes the population to seek non-agricultural incomes" (Bryceson, 2002: 732). To date, some empirical studies in SSA articulate that 30 to 50 percent of household incomes are in fact derived from non-farm sources and of growing importance (Reardon, 1997; Bryceson & Jamal, 1997; Little et al., 2001). Furthermore, although there are several types of relationships that can be demonstrated with livelihood diversification (e.g. there are some negative relationships), the relationship most identifiable in SSA is a linear positive relationship where the livestock, land and human capital of smallholders tend to be the assets that separate those in rural communities who are better off as opposed to the poor (Niehof, 2004; Reardon et al., 2000).

Although there are clearly benefits to livelihood diversification in SSA, there are still challenges to fully integrating this strategy. Primarily, it is becoming increasingly realized, especially in Africa, that the less poor often have more effectively diversified incomes and the poor are often found in either low-return farm activities or non-farm activities (Dorward et al., 2003; Bryceson, 2002). This exacerbates disparities between the most vulnerable and better off smallholders that already exist. There are also policy challenges when governments and donor agencies attempt to diversify rural household livelihoods in SSA, even after the post-SAP era. For example, many do not see nonfarm

activities as their mandate (e.g. more influence is placed on increasing agricultural productivity as opposed to nonfarm employment and income). Furthermore, there is a lack of rural financial systems, as well as the HIV/AIDS pandemic and conflict across some countries in SSA (Barretta et al., 2001).

Therefore, although livelihood diversification does exist, and is becoming increasingly rampant across SSA, there are still indicators to watch for and possible negative affects that must also be accounted for. This research demonstrates the importance of livelihood diversification to increase stable income for smallholders and their families beyond the growing and harvest seasons.

2.4 Rural Development

To further develop the role of small-scale farmers, the role of markets and their possible relationships, it is increasingly important to recognize the impact of each on rural development throughout Africa, and more specifically Kenya. Currently, small-scale agriculture is the main way for people in rural Africa to meet their food needs but also to sustain livelihoods (World Bank, 2008). For the purpose of this research, the World Bank defines rural development as "…a strategy concerned with the modernization and the monetization of rural society, and with its transition from traditional isolation to integration with the national economy…" (Escobar, 2011: 155). However, ideas about what rural development is and how best it can be achieved have a long history in the twentieth century. For example, while in early theories small-scale farmers were at best seen as passive actors in national economic development by supplying the necessary resources to the modern sector (e.g. Lewis' dual-economy theory of development), since the 1960s they are often presented as the central actor of rural development (Ellis & Biggs, 2001). Besides the fact that the majority of the rural poor

are still small-scale farmers, this shift in thinking owed much to the failure of earlier integrated rural development projects and a multitude of studies showing the economic efficiency of small-scale farmers and their important contributions to rural economies including "labor, capital, food, foreign exchange and a market in consumer goods…" (Ellis & Biggs, 2001: 441). The agenda for making rural livelihoods 'sustainable' since the 1980s has attempted to include and reconcile both local and global perspectives on what constitutes a rational, just, and environmentally benign use of resources for rural empowerment (e.g. Chambers, 1983).

2.5 Smallholder farmer[2]

For the purpose of this research, "small-scale farmer" will refer to the dominant form of agriculture in rural Kenya where family labor is used to cultivate customary land for subsistence as well as possible additional, commercial purposes. The term "smallholder" (or "small-scale") farmer contrasts with the less common, large-scale commercial forms of agriculture that operate as businesses with waged rather than household labor.

Defining characteristics of a small farm often include farms of a particular size, often averaging around two hectares but can be as large as ten (although in many countries this land is getting smaller) and who predominantly use family members as their labor force, as abovementioned (World Bank 2003; Hazell et al. 2010; Wiggins, et al., 2010; IFAD, 2011; Hazell et al. 2007). Small farms in SSA most notably are often usually only subsistent; however they do include some basic mix of commercial and subsistent market activities (Narayanan & Gulati, 2002). Although smallholders do not

[2] Please note that this paper will use smallholder and small-scale farmer interchangeably. Both terms are meant to be interpreted as the same concept.

have access to or own significant amounts of land, there is a strong inverse relationship between farm size and land productivity with smaller farmers often generating higher per-unit farm output than larger farms (Heltberg, 1998). This is largely due to the farmers' more intensive use of inputs and the lower costs associated with managing family labor (Heltberg, 1998).

Although smallholders in developing countries produce more than 50 percent of the food, they still remain the most food insecure population in the world (Fan et al., 2013). This clearly highlights the significance of agriculture in developing countries. However, despite smallholders' important role in food security, they still remain largely untapped and are disproportionately represented among the world's poorest (Fan et al., 2013). The current path, for smallholders, leaves them trapped in poverty and increasingly dependent on emergency food assistance or safety nets that are neither economically nor socially sustainable (Fan et al., 2013). Linking smallholders to markets is key in alleviating the poverty and hunger of the smallholders whilst also fostering more sustainable and inclusive development (Fan et al., 2013).

Within the political ecology lens, there is an undeniable focus on the ecological aspect of small-scale farming as well as the ecological impact of socio-economic constraints. Within this context, small-scale production is often based on exploiting the limited resources under the variable agricultural conditions. In order to move towards high value products like fresh fruits and vegetables (henceforth FFV) that might be attractive to supermarkets and other formal markets, smallholders need to make critical decisions in terms of crops (from subsistence to higher value ones), inputs (e.g. the use of herbicides and pesticides), and labor use (implementing contracted labor from purely

family labor) (Peet & Watts, 2004). Socio-economic constraints such as the high costs of crop inputs (like the use of herbicides and pesticides, fertilizers and compost) often decrease the already limited ability of smallholders to practice crop rotation further reducing biodiversity (Matson et al., 1997). This prevalent trend tends to send many family members off-farm to participate in other activities to seek a living. Fundamentally, smallholders contribute to food security but are also managers of natural resources and biodiversity (producing crop varieties and livestock) as well as being central to climate change adaptation and mitigation (Fan et al., 2013). Hence, the political ecology framework relates to the smallholder as the nature (including the history) of power differences (be it economic, social and/or political) within the four rural communities surrounding Eldoret and Kitale in this research.

2.6 Formal versus informal markets

Alongside the more theoretical lens of this research, in terms of food security and rural development, it is necessary to analyze the current literature available on markets and the emergence of relationships between them and small-scale farmers. To begin, markets will be distinguished (for the purpose of this research) into formal and informal markets. Regardless of the market used, it is imperative to note that most people in Africa "…buy food rather than produce it; in fact very few people, including small farmers, are entirely self-sufficient in production…" (Clover, 2003: 9). Thus, the presence of markets is critical to questions surrounding food security. Identifying that there is a dichotomy of markets in Africa each will be looked at respectively.

2.6.1 Informal markets

Informal markets are characterized by easy entry, a dominance of family owned operations, and small-scale, labor intensive and widely unregulated markets (Amenya,

2007). The most common example of an informal market in Africa is kiosks selling different FFV in their local communities (Amenya, 2007). With the informal markets being so dominant in SSA, there are many livelihoods that are dependent on the income as well as the petty trade that is involved in this market. Hence, there are advantages beyond income that informal markets grant small-scale farmers. For example, its significance lies in its operation at a local level indicating that it has low barriers to entry and therefore, can more easily contribute to the household income (Marter, 2002).

Furthermore, it is important to note that development theorists often characterize that the end of the informal sector is a necessary stage in development (Omamo, 1998). Proceeding stages represent growth, ultimately towards a formalization of the market (Omamo, 1998). Hence, although small-scale farmers appear to have difficulty accessing more formal markets, informal markets are still persisting, catering to the households that are currently unable to join formal markets. Other potential benefits of the persistent informal markets may include (but are not limited to) health aspects, culturally appropriate food, less cost for transportation, a decreased need and dependency on money and more autonomy (Hazell et al. 2007; World Bank 2008). Furthermore, as will be described in the following, there are numerous disadvantages and challenges for small-scale farmers to access formal markets, possibly deterring them from formal markets into informal ones.

2.6.2 Formal markets

In agriculture, formal markets are often described as those that are governed by high quality and food safety standards where the activities of the different companies can be easily monitored (Ram, 2010). Different examples of formal markets include supermarkets, export chains and processing industries (Ram, 2010). For the purpose of

this research, formal markets will refer to supermarkets. It is also imperative to take into account the critique of market involvement for small-scale farmers. Accordingly, political ecology examines why certain groups of farmers have successfully engaged (and debatably "developed") because of partnerships with formal markets (the supermarket within this context) and others have not (Peet & Watts, 2004). The power relations (e.g. policies enforced by the GoK, purchasing power, decisions regarding land use and crop management) between the farmers and the supermarket (or other) buyers are unequal. Another factor to consider is socio-economic differentiation within farmers as the ability for smallholders to participate depends on their social capital (e.g. degree of solidarity) and human capital (e.g. capacity to negotiate as well as having the resources to negotiate) (Markelova et al., 2009). These capacities are also contributing factors leading to different outcomes for smallholders who engage with formal markets. Consequently, there are significant impacts on the social ecological landscape within SSA, especially on small-scale farmers.

Smallholder farmers face a variety of challenges to accessing and participating in formal markets. At a national level, the deregulation of food prices and free market competition is ideally intended to reduce the prices consumers pay even while improving the producer prices paid to farmers, as in this ideal world the costs of farmers' production would also go down reflecting profits (Havnevik et al., 2007). There are clearly complications in this ideal world, as this is not the case alongside the deregulated food markets often causing further problems due to volatile fluctuations in price as well as supply (Havnevik et al., 2007). Furthermore, another critique of successful development with small-scale farmers entering formal markets is the widespread lack of storage

facilities. With the inability to store excess produce, small-scale farmers must necessarily participate in 'forced commerce,' where they must sell their crop at low prices at harvest time in order to cover household expenses with liquid capital until the following season (Havnevik et al., 2007: 24).

A further analysis of the challenges faced by smallholders takes a more historical route. The integration of smallholders into markets is not a new (or necessarily strictly positive) phenomenon (Peet & Watts, 2004). Colonial times, more specifically in the 19th century, witnessed the penetration of markets with widespread famine, a regular result of the process of forcing smallholders into modern economic and political structures (Davis, 2004). Other indications of the historical presence of integrating smallholders into markets is seen in the 20th century when farmers were forced to sell their produce at lower costs (as all regions competed for the same goods) (Peet & Watts, 2004). Consequently, this served two main functions in supplying cities with cheap food whilst also forcing rural farmers to search for alternative incomes (e.g. sending family member into town for waged labor or livelihood diversification as noted previously) as food sales were not very lucrative (Davis, 2004). Hence, some scholars (e.g. Barrett and Havnevik) see the above transition and role of the smallholder as intrinsic to development and capitalist expansion, while others (e.g. Peet and Davis) may refer to this historical analysis as evidence only of market failures.

Despite these challenges, there are nonetheless farmers who want to actively participate in the formal markets, be it for higher incomes or more consistency in produce sold. It is often not the case that small-scale farms have these means. In order to advocate for participation, researchers claim that although small farms may not be able to

produce in order to compete in the supermarket enterprise, they can work as laborers for the larger, industrialized farms (Neven et al., 2009). On this point, Neven et al. (2009) are optimistic, explaining that although the small-scale farmer may neglect his own land, the proletarianization of farming enables the small-scale farmer to be paid higher wages (on average), more full-time jobs based on continuing production increasing income and payments towards household expenses (Neven et al., 2009). More so, the laborer has the potential of learning from doing, in gaining experience in technology or quality control (Neven et al., 2009). Throughout this review, it is commonly articulated that even though small farms may be faced with challenges and many times are excluded; there are still opportunities for them to integrate into modern supply chains and formal markets if they choose to do so (Rao et al., 2010; Reardon et al., 2004). With the ongoing expansion of formal markets or supermarkets, there is also a large quantity of literature on linking them to small-scale farmers that often argues that the formal market is envisioned as a kind of transformative force (Omamo, 1998). This research will advocate that the enthusiasm and optimism this approach presents may be too high.

2.6.3 Supermarket expansion in SSA

The most recognizable example of a formal food market is the supermarket. Supermarkets in SSA are often defined as "… self-service stores handling predominantly food and drug fast moving consumer goods with at least 150m^2 of floor space" (Reardon et al., 2004: 3). Although this is the common definition, supermarkets are also often defined as differing from local shops by offering consumers a wider choice of goods with lower prices (Traidcraft, 2007). Supermarkets are identified as the element that marks the food system in modernization, rapid urbanization and demand for quality (Omamo, 1998). Expansion of supermarkets and their entrance into formal economies is often

based on high growth in urban incomes and higher consumption patterns (Omamo, 1998; Markelova et al., 2009).

Currently, Africa is the most recent place of rapid supermarket expansion, with sales increasing around 18 percent annually as well as supermarkets themselves having a 20 percent share on the food market (Reardon et al., 2004; Neven et al., 2009: 1805). Upon recognition of the increasing importance of supermarkets, it becomes relevant to outline their impacts on small-scale farmers as well as the informal economy. For example, supermarket chains demand higher and a more consistent quality and delivery of produce, which has a negative effect on small-scale farmers, as they are often unable to meet these demands (Neven & Reardon, 2003). However, even as quality standards have been instituted, supermarkets do not see it as their responsibility to increase the prices of products charged to consumers in order to assist the small-scale farmers in the investments and innovation needed to sustain this higher quality production (Reardon et al., 2004). As a result, small-scale farmers are often excluded from participating in the markets. Secondly, "supermarkets are seen to grow at the expense of the informal economy, often causing its demise," having further potential effects on small-scale farmers (Omamo, 1998: 122).

With the expansion of supermarkets, there has also been an increase in literature on the barriers that small-scale farmers may have in participating in more formal markets. Some of the challenges faced by smallholders include lack of investments, distance to markets and other barriers to accessibility, or simply the price of production (Hazell, 2005; Markelova et al., 2009; Neven & Reardon, 2003; Reardon et al., 2009; Reardon et al., 2004). These binding constraints illustrate the high potential for negative effects

wherein the small-scale farmer is driven out or prevented from entering the market due to the rapid expansion of supermarkets based largely on their inability to maintain certain necessary criteria (Neven & Reardon, 2003).

Since many small-scale farmers lack the capacity to enter into relationships with supermarkets, it remains the case that many small-scale farmers do not directly participate with them (Reardon et al., 2009). Furthermore, "[t]he interaction between local producers and the supermarket giant is seen [by smallholders] as an isolated, depoliticized transaction" (Omamo, 1998: 52). Since there is an overall lack of accessibility in networking and building relationships to work within markets, most small-scale farmers are forced to return to subsistence farming (this is irrespective of having access to improved agricultural technology) (Omamo, 1998).

In sum, there are numerous dimensions that must be taken into account for the purpose of this research. Food security is a broad but specific attainable goal of developing countries. In order to reach this goal, the role of the smallholder must be understood. Through a political ecology lens, the interplay with the environment as well as human productive activity must remain significant. The dominance of small-scale farmers in the rural and food economies must be acknowledged. More specifically, the use and integration of markets (both informal and formal) are critical attributes from both a food security as well as a development perspective. However, in order to increase the food security of SSA, livelihood diversification and the consequences of it also play a critical role in ensuring sustainable livelihoods for smallholders and causally agricultural production and food security. This research takes into account the numerous barriers of smallholders entering markets by taking a region in Kenya and identifying individual

accounts. The role of these barriers, the solutions as identified by smallholders and the subsequent policy considerations for the GoK and donor agencies will be articulated in subsequent chapters.

Chapter 3: Opportunities and challenges facing Kenyan smallholders: Food (in) security and the role of formal and informal markets

3.1 Overview of food (in) security in Kenya

As explored in Chapter 2, SSA remains a region where a large portion of the population is food insecure. In Kenya, food insecurity has been specifically attributed to numerous factors including the high costs of energy and inputs and low (and stagnant) agricultural productivity (IFPRI, 2012). Currently, approximately 79 percent of Kenya's population lives in rural areas (IFAD, 2011). Furthermore, nearly 50 percent of the entire country's population, or around 20 million people, are deemed poor and affected by chronic food insecurity (IFAD, 2011). In Rift Valley, the primary area for this research, approximately 150,000 smallholders are deemed extremely food insecure (or 1.5 percent of Rift Valley's population) (IFPRI, 2012). With close to 80 percent of Kenya's population living in rural areas (as well as at least half of them affected by food insecurity), it is undeniable that smallholders play a significant role in Kenya as both producers and net buyers of food.

For a better understanding of the food insecurity in Kenya it is significant to recognize that agricultural production (largely stagnant) in Kenya is usually rain-fed and vulnerable to weather related fluctuations. There has been an increased frequency of droughts as well as floods, due largely to climate change, which has led to crop failure and livestock deaths (Alila & Atieno- Agricultural Policy, 2006). Undeniably, climate change is not the only factor leading to the severity of weather impacts. Indicatively, the political ecology of resource use is also known to create severe weather systems (e.g. population increase in flood prone areas and market or population-driven pressure to

expand cultivation in former forested water catchment areas which is known to increase flood and drought risks) (GRID, 2014).

Another factor exacerbating food insecurity in Kenya is land and the availability of productive land. Currently, 80 percent of the country is arid or semi-arid receiving, on average, less than 800 millimeters of rain per year and therefore, the land has only moderate to low agricultural potential (GRID, 2014). Of this land, less than 7 percent of Kenya's cropped land is irrigated, although irrigation is itself constrained by topography and the uneven distribution of streams and rivers, but also a lack of investment in small-scale dams and reservoirs, further decreasing agricultural potential (Alila & Atieno-Agricultural Policy, 2006). These factors further diminish the ability of the smallholder to increase their productivity allowing for persistent food insecurity.

An example of the effects of weather on crops can be seen in 2011, as there was a shorter than normal rainy season in Kenya during both the short rain season (from September to November) and the long rain season (from March until June), which lead to crop failures and lower than normal harvests (Expert Africa, 2013). Although the levels of food insecurity and the numbers of affected people in Kenya did not reach levels as severe as elsewhere in the Horn of Africa (Somalia was the worst affected), the GoK, UN, non-governmental organizations (NGOs) and other district level actors formed the Kenya Food Security Steering Group (KFSSG) within the smallholder livelihood zones in Kenya to analyze and develop prevention mechanisms for possible future droughts (GoK, 2013). The KFSSG hypothesized that the variability of the short rains will continue to have significant impacts on crop and livestock production, nutrition and health, markets and trade as well as education (GoK, 2013).

Across the arid and semi-arid lands as a whole, many of which lie in the north and south of the Rift Valley region, it is an ongoing challenge to ensure food security due to the drought prone environments, lack of access to transportation, and decreased water and sanitation services (GoK, Agricultural Sector). As a result of the chronic food insecurity across much of Kenya, the World Food Program (WFP) has provided varying degrees of assistance (e.g. food distribution, food assets, cash transfers, school feeding and safety net feeding) over recent of decades (Ogola, 2012). WFP funding peaked at 21 million USD in 2006, ten times the level of the 2 million USD funding in 2013 (WFP: Kenya, 2014). With the continued efforts of the WFP and other donors, the food security status of smallholders has significantly improved since 2011, as 2011 saw Kenya witness the impacts of extreme weather variability (WFP, 2014). In 2011, reports indicated that food insecurity was a result of poor rains, floods and tropical storms (WFP, 2014). Since 2011, much of the food insecurity funds have ended with approximately 2.2 million people now (in 2013) classified as food insecure; a number that is down from the 3.75 million deemed food insecure in 2011 (GoK, 2013). Thus, although food insecurity appears to be decreasing, there are continued stresses and pressures within Kenya that demonstrate vulnerable populations, and a developing country that still has high food insecure populations.

In the report headed by the GoK, there are numerous implications or reasons suggesting why there is persistence in food insecurity throughout Kenya. Even with the return of a regular rainy season in 2012 and (arguably) in 2013, many of the smallholders have been unable to enhance livestock productivity (a consequence of increased water supply) due to their low livestock asset holdings in the first place. Furthermore,

improvements in household purchasing capacity is not increasing for smallholders and families in rural areas since even though average livestock prices have increased, these smallholders are focused on building their herds as opposed to selling their livestock (GoK, 2013). Some of the other factors that are affecting food security include crop failure, conflict disrupting market supply routes, low absorption of modern technologies, high cost of inputs, low and declining soil fertility, an inappropriate legal and regulatory framework and transport and transaction costs (GoK, Agricultural Sector). Therefore, this recent example clearly illustrates the effects of weather systems, and drought on the livelihoods and the food (in) security of smallholders.

With Kenya's persistent food insecurity, the GoK does recognize that its current path to diminishing food insecurity has been ineffective. As a consequence, in its Medium-Term Investment Plan: 2010-2015 Agricultural Sector Development Strategy investment areas are emerging in increasing productivity, promoting private sector participation, promoting sustainable land and natural resources management, reforming delivery of agricultural services, increasing market access and trade and ensuring effective implementation (GoK, Agricultural Sector).

3.1.1 Availability of food

As noted in Chapter 2, the commonly held definition of food security (from the FAO) is characterized by both the availability of food as well as the accessibility of it. The next two sections highlight these to characteristics within the context of Kenya. Generally speaking, the availability of food tends to be highly seasonal, which is dependent on production cycles and climate conditions (WFP, 2013). For the small-scale farmer, the Kenyan MoA (1994) describes that the bulk of Kenyan farms (98 percent)

were smaller than 10 hectares and the average household land holding was 2.5 hectares (Kamau, 2008).

Furthermore, although the availability of food is cited to exist in Rift Valley, traditional diets show very little diversification. Nutritional deficiencies are rampant across Rift Valley as consequence, which is largely suggested by the lack of nutritional knowledge (KFSSG, 2012). For example, in some communities, although not apparent throughout this research, some foods (e.g. eggs and poultry) are still considered taboo (KFSSG, 2012).

Recognizing the lack of available food to smallholders in Kenya, including Eldoret and Kitale, one of the largest investment priorities of the GoK and other donor agencies in Rift Valley is crop development. The purpose of the investments is to improve smallholders' access to affordable credit (and inputs) to allow an increase in production (in staple crops as well as other crops) (KFSSG, 2012). A second priority of investments is on trade. Promoting agricultural trade, even across and within smaller communities outside of larger town centers, increases the amount of available food as well as income of smallholders and their households (KFSSG, 2012).

3.1.2 Accessibility of food

The second most defining food security characteristic includes the accessibility of food. Beyond the scope of rural areas and small-scale farmers, the KFSSG has also estimated that roughly 5.2 million people living in urban areas are also food insecure (GoK, 2013). Some of the probable causes for this food insecurity include stagnant household incomes, increased food and fuel prices, and a depreciation of the Kenyan shilling against other currencies (GoK, 2013). This is negatively affecting the purchasing

power of households, increasing food insecurity as well as forcing households to forgo other non-food expenditures such as health care and education (GoK, 2013).

As abovementioned, another aspect of food availability, in both rural and urban areas, is the price of food and its inherent volatility. The price fluctuation of produce is normally driven by production cycles (WFP, 2013). In other words, prices often drop at harvest times as markets become flooded with many farmers (both large and small-scale) selling at the same moment in time whereas these prices rise during periods of scarcity (either due to unexpected shortfalls during drought, or more predictably during seasonal dry periods and pre- harvest periods, e.g. December to March or July to October in Kenya) (WFP, 2013). As a result, market prices are generally observed as lower between November and May (WFP, 2013). The high price volatility, which is especially found in vulnerable households in the rural areas, is at risk for greater food insecurity as they often do not have a financial buffer to protect them. Also, the lack of storage or refrigeration options in the rural areas means that the produce must be sold immediately post-harvest, rather than kept for use during scarcity periods. As such, smallholders continue to sell low and buy high (Robbins, 2004). Coping mechanisms of poor households responding to the high volatility of food prices, such as restricting the amount of food eaten and the frequency of meals, directly undermine food security and nutrition goals (WFP, 2013).

Another barrier to the accessibility of food is public infrastructure, including roads. Road conditions have a major impact on market supply. It can take up to four days for produce to reach remote markets in the dry season alone (WFP, 2013). More specifically, in Rift Valley, the roads are in poor shape due to the topography, heavy rains and inadequate funding (KFSSG, 2012). The poor road conditions have decreased the

ability of smallholders to access markets, leading to large transaction costs and increased post-harvest losses (KFSSG, 2012). In the rainy season, these conditions become exacerbated, as some of the terrain becomes impassable and as such the demand continues to increase as the availability reduces (WFP, 2013). Thus, increasing accessibility to markets through infrastructure, for smallholders to both have access to markets as well as gaining produce transported to their rural communities, is difficult to achieve in Rift Valley.

Investment areas that the GoK and other donor agencies are currently prioritizing in order to increase the available of food is infrastructure development. Undoubtedly, there are other barriers restricting the accessibility of food. Yet, there is a focus on improving access to roads, expanding telecommunication, increasing the energy sector and promotion micro-credit facilities that are currently seeing the largest investments (GoK, 2013).

Although on the whole it appears as though Kenyans are becoming more food secure, the current food security situation remains vulnerable. There are still challenges to the sustainability of this growth. For example, one study found that while 30 percent of smallholders in a particular region in Kenya sold their product to markets at times of plenty, in the same region 62 percent of these smallholders became maize buyers a few months after the harvest season when their own reserves were depleted (Barrett, 2008). Consequently, poverty is further driven as farmers are forced to buy food later in the season at higher prices, known as the "sell low, buy high" (Barrett, 2008; Havnevik et al., 2007). Thus, in order for Kenya to continue its progress, rural development (including rural poverty) must be considered as the role of small-scale farmers and their

relationships with different markets is critical both to their individual livelihoods but also as a strategy to increase overall food security.

3.2 Government and donor interventions to promote agricultural and rural development

There are several different avenues the GoK has taken to ensure national food security while promoting smallholders and rural development. In terms of agricultural development, amongst the different ministries and agencies within the GoK, the MoA is the best resourced and best funded of all Ministries in Kenya (Pouton, 2010). However, there is still an insufficient operational budget and a disproportionate number of staff in offices as opposed to the field (Pouton, 2010). As a result, it can be argued that the MoA has remained relatively ineffective in assisting smallholders in terms of rural development, agricultural development and food security.

Prior to articulating the policies aimed directly at smallholders, the GoK has implemented other policies to promote, rural development more broadly within Kenya. One of the largest of these policies adheres to the United Nations Conference on Environment and Development (in Rio de Janeiro) where Kenya agreed to join and ratify other policies that highlight the environment and development (UN DESA, 2012). Since 1963, Kenya itself has pursued development that has focused on eradicating hunger, illiteracy and diseases (UN DESA, 2012). From 1986 to 2001, Kenya underwent what some call a full rural decentralization period as Kenya's economy was more market-oriented emphasizing macroeconomic reforms under SAP (advocated by Bretton Wood institutions), private sector reform and an introduction of the rural-urban relationship (IFAD, 2012). As the rural-urban relationship became increasingly apparent, the rural communities in Kenya began to witness higher rates of rural poverty as this sector was seen as declining.

By vowing to continue to sustainably develop as well as recognizing the increase of rural poverty, Kenya launched its long-term development blueprint, Vision 2030, in 2008 (IFAD, 2012). The objective of Vision 2030 is to create "a globally competitive and prosperous nation with a high quality of life by 2030" (The National Economic and Social Council of Kenya, 2008). The hope is that Vision 2030 will help Kenya achieve its MDGs while also transforming the country into a newly industrialized country (The National Economic and Social Council of Kenya, 2008). The different sectors that are recognized in Vision 2030 by the GoK include development that depends on agriculture, tourism, energy and manufacture which also all rely on the management of natural resources (IFAD, 2012). Thus, over time, the GoK has taken different approaches to rural development. The current policies indicate countrywide economic development, which is inherently reliant on rural communities as a whole.

On the other hand, more specific agricultural policies that Kenya implements include increasing agricultural productivity and incomes for smallholders. Agricultural productivity has been on the decline in the past decade and this has had implications for employment, income equality and food security. One reason for the low productivity is the inability for farmers to afford readily available and modern farming techniques, and accessibility to markets (Ehui & Pender, 2005). Consequently, the GoK targets these activities in their agricultural policies. An example of a GoK policy that meets this objective is the Strategy for Revitalizing Agriculture (SRA) that was implemented in March 2004. It is a 10 year program that was established to develop the agricultural sector by aiming to increase productivity, lower per unit costs of production, improve extension services, improve access to financial services, encourage growth of

agribusinesses, reduce taxes and increase market orientation (Alila & Atieno- Agricultural Policy, 2006). Numerous critics argue that the SRA depends on certain structures and actors in the agricultural sector who were not consulted in the implementation process and as a result, ownership of the Strategy is a problem (Alila & Atieno- Agricultural Processes, 2006). Although there may be difficulties in the implementation of SRA, it is still a reasonable policy meeting many of the demands small-scale farmers currently face.

Other policies the GoK is involved in include rural development through infrastructure and other methods targeted directly at small-scale farmers. For example, the GoK has attempted to engage in rural development by implementing policies that favor increasing food sales, market participation (including access to credit leading to debt and dependency) and training for small-scale farmers (GoK, 2012). This is being sought by introducing food quality measures as well as fostering specific partnerships (between farmers, buyers and markets) to further integrate small-scale producers into the national economy (Neven & Reardon, 2003). There are, however, many challenges relating to this approach. There may be various limits on small farmers' productivity, whether environmental (e.g. soil fertility, climate-related) or socio-economic (e.g. labor or land availability). The efficiency of small-scale farmers in establishing or sustaining market-based production may also be a challenge. Finally, even if such stimulation is effective, food production may still fail to keep pace with the national population growth (especially in the urban areas) and valuable agricultural land is continuously being taken out of production and put to other uses (Ehrlich et al., 1993). For example, current fertile farmland is often sacrificed in order to meet the demands of urbanization; thus,

urban migration and industrialization reduce agricultural land (Ehrlich et al., 1993). Other indicators include land grabbing which increases speculation, land value and results in displacing small-scale farmers. Hence, the GoK appears to not be coordinating its rural and urban policies, as urbanization policies are impeding rural development.

Aside from rural development, another multilateral program currently being implemented in Kenya is through the WB on a project called the Adaptable Program Lending for Infrastructure Finance and Public-Private Partnership Project (World Bank, 2012). The objective of this initiative is to promote and increase private investment in the infrastructure market (for example physical infrastructure such as roads and power infrastructure such as hydro plants) that would increase the availability and the accessibility of smallholders to reach larger, and often, more formal markets (World Bank, 2012). Thus, it is evident that the GoK (with assistance from international donors) is significantly involved in the agricultural sector. Through different implementation strategies and policies, the GoK appears to be largely involved in assisting smallholders.

3.3 Role of informal markets and formal markets in Kenya

Currently, Kenya's agricultural economy is divided into three distinct categories including agricultural self-employed, the informal sector and the formal sector. Hence, the role of markets in Kenya's agricultural sector is substantial. Both informal and formal markets are important to the Kenyan economy, including the GDP, and to the sustainable livelihoods of smallholders. Agriculture contributes approximately 25 percent of GDP (the largest contributor to its GDP); employing 75 percent of the national labor force in both informal and formal markets (Alila & Atieno- Agricultural Policy, 2006; Barr, 2011; Pollin, 2009).

3.3.1 Kenya's informal markets

As of 2007, the entire Kenyan informal sector contributes to 95 percent of the country's business but only 37 percent of the urban population, suggesting high participation of the rural population (including small-scale farmers) (Amenya, 2007). Since the Kenyan informal sector is usually small-scale, and often at a subsistence level, there are usually only a few employees employed per farm (Amenya, 2007). Interestingly, although there is rapid expansion of supermarkets across SSA, some scholars argue that informal markets are still the most important food outlets for most Kenyan consumers (Omamo, 1998). This is often the case as "the informal market is inherently tied to lower costs of food, local sourcing of produce and, at times, quicker transportation within the network or supply chain" (Omamo, 1998).

3.3.2 Kenya's formal markets

On the other hand, formal markets have become an increasing normality in Kenya often characterized by scholars as difficult to enter, corporately owned, large-scale and regulated (Amenya, 2007; Neven & Reardon, 2004). Although it may be the case that formal markets may be more challenging to enter, formal markets are expanding throughout SSA and the Kenyan supermarket sector has expanded especially rapidly (it is also entirely dominated by domestic firms). In the 1990s in Kenya there were only five supermarkets, all located in Nairobi, whereas now there are 400 throughout the country, with an average store size of 9,900 square feet (Kamau, 2008; Weatherspoon & Reardon, 2003). The growth and overall expansion of supermarkets in Kenya has largely been attributed to two main factors: urbanization and trade and domestic liberalization (Neven & Reardon, 2004). For example, the population in cities has also rapidly increased, with Eldoret doubling their population from 1989 to 2002. The GoK has also been

implementing domestic market liberalization policies since 1993 that have included economic reforms and stabilization policies that have incentivized the participation and rapid expansion of supermarkets (Neven & Reardon, 2004).

The supermarket sector in Kenya is identified as three-tier. The first tier consists of two main players (the domestic firms Uchumi and Nakumatt) who control almost 50 percent of the sector with their numerous stores and locations and 60 percent of sales of all formal markets in Kenya (Neven & Reardon, 2003). The second tier consists of supermarkets such as the domestic chains Tusky's, Ukwala and foreign ventures like Metro Cash n' Carry (now defunct) followed by the last tier which are small independently owned (usually single-store) supermarkets (Neven & Reardon, 2004). Nearly 80 percent of the number of stores in Kenya is found in the first and second tier, while the small, independent supermarkets cover only 20 percent supermarket sector (Neven & Reardon, 2004). Although supermarkets are predominant in larger cities, the expansion is now found in secondary cities and towns. For example, in as early as 1999, Eldoret saw its first three supermarkets (Uchumi, Metro and Ukwala) (Neven & Reardon, 2004).

As the supermarket expansion across Kenya is noted, it is also significant to identify the impacts of these supermarkets. Currently, supermarkets in Kenya are already buying half as much as the amount of FFV exported (Neven & Reardon, 2004). Furthermore, in 2004, supermarkets represented approximately 70 percent of the total food sales in Kenya (Neven & Reardon, 2004). Consequently, supermarkets are continually taking consumers (and as such market shares) away from smaller, more informal retailers and kiosks (Neven & Reardon, 2004). There have also been

considerable effects on other markets. For example, the effects of this expansion are seen on local shops throughout Kenya as there are an estimated 20 percent of independent shops that went out of business, due primarily to supermarket expansion, from 2000-2004 (Traidcraft, 2007).

A final impact, highlighting the purpose of this research, is the effects of the supermarket expansion (even in smaller cities such as Eldoret) on smallholders. Undoubtedly, as supermarket expansion continues across Kenya, there will be impeding challenges placed on smallholders and their agricultural production. It is usually the case that the smallholders who supply these supermarkets have invested in advanced irrigation systems as well as their own means of transportation in order to participate (Kamau, 2008). Unfortunately, the most vulnerable smallholders in remote areas (such as on the outskirts of Eldoret and Kitale) are unable to access the supermarkets for their own consumption or unable to sell their FFV to the supermarkets for income. However, even with this consideration, the Kenyan informal market still plays a significant role in the Kenyan FFV (and other goods) economy and there are still opportunities for smallholders to participate and policy interventions to ensure these gaps and needs are met. This research highlights the opportunities, the gaps in current initiatives dedicated to increasing the accessibility of smallholders to markets and the possible future initiatives that could be implemented to increase this accessibility for smallholders as producers for the supermarket as well as potential consumers.

In sum, the vulnerability of Kenya's food security is undeniable. The current food security situation is influenced by many aspects including (but not limited to) weather systems, price volatilities, food supply (and within it food availability), and

infrastructure. Although the GoK has taken some precautionary measures, as well as implemented some mechanisms (within their capacity) there are still considerations that may need to be recognized in order to create an entire population that is deemed food secure by the FAO. The role of markets, in terms of food security but also as a means to livelihoods for smallholders, is imperative when determining next steps. Finally, it is undeniable that agriculture in Kenya (with its contributions to GDP and the labor force) is essential and dependent on smallholders. Thus, policy recommendations, implementation strategies and mechanisms to assist smallholders should be a focus for the MoA and the GoK as a whole.

Chapter 4: An In-Depth Case Study Analysis

A case study analysis is presented as one way in which communities can participate in discussions about their individual, household and community concerns and needs. For this research, four different communities were addressed with varying numbers of smallholders occupying different amounts of land, and with differing crop yields. An analysis of the data collected illustrates trends between smallholders and their thoughts on international organizations, the GoK, informal and formal markets. Although the similarities are important, the differences (between communities as well as between smallholders within one community) are imperative to demonstrating the lack of universality in opinions of smallholders, and consequently, the policies needed to overcome certain barriers within different local contexts. The final aspect is to consider other actors across the agriculture value chain, in this case supermarket businessmen, to conceptualize their understanding of smallholders and their belief of their role in making formal markets available and accessible.

4.1 Design and Methodology

This research was conducted in Kenya in its Western province, between the larger towns of Eldoret and Kitale. The rationale for choosing this site was the lack of rural community research conducted at a smallholder level previously as well as the region being noted as a highly productive agricultural area with the WFP identifying that there are many farms and little villages located along the road that connect Eldoret to Kitale (Tremblay, 2012). Furthermore, most of the small-scale farmer holdings, as identified by the WFP, are recognized to be relatively small with the majority of the agricultural work being done by smallholders and their families (Tremblay, 2012). A final consideration to

conducting research in the Western province was the lack of data collection and analysis from any area in Kenya this far away from Nairobi- Kenya's capital city hosting the largest population and the highest density of both informal as well as formal markets. Thus, the two larger towns Eldoret and Kitale would suffice as centers with supermarkets and more formal markets to the rural communities (and subsequent, informal markets) surrounding them.

The first aspect of the research focuses specifically on smallholders. Smallholders were individually interviewed in four specific rural communities surrounding Eldoret and Kitale (Annex A: Map of Case Study Area): Matisi (80 km from Eldoret and 70 km from Kitale), Sirende (62 km from Eldoret and 10 km from Kitale), Moi's Bridge (50 km from Eldoret and 23 km from Kitale) and finally, Waitaluk (62 km from Eldoret and 15 km from Kitale). To conduct the interviews in each of the locations, a Research Assistant was hired, and was also responsible for contacting all smallholders in each of the communities. The criteria necessary to be considered for the first interview was for the participant to be farmer (in this context, this implies being able to produce maize and FFV) and have access to or own anywhere from 0.25 to 10 hectares of land. The stipulation for land was pre-determined as those without 0.25 hectares are essentially landless and not living from agriculture, while people over 10 hectares are very rare and would be representative of a quite exceptional, non-poor population. The objective was to be as inclusive as possible of the smallholders in these communities. If a smallholder met the selection criteria, and he or she agreed to the consent form, the Assistant conducted the interview of which a copy of the question guide can be found in Annex B: Smallholder Interview Question Guide. The questions to the smallholders

varied including topics on diversification of livelihoods, farming inputs, crop yields, community engagement, participation in formal and informal markets and thoughts on the role of the GoK and NGOs. Combined these questions help to articulate the challenges and opportunities smallholders, in their respective communities have in attaining food and livelihood security.

The second aspect of the research focuses on employees of supermarkets, as other actors across this agricultural value chain. More specifically, four different businessmen from four different supermarkets were interviewed. The only stipulations for these interviews were the supermarket location to be in Eldoret and for the person being interviewed to have, at minimum, a supervisory role in the particular supermarket. In total four businessmen were interviewed (all were male), from four different locations: Suam Supermarket, Transmatt Supermarket, Naivas and Tusky's. Two of the four businessmen interviewed had previously held positions at a Nakumatt Supermarket location. The different types of questions asked to supermarket businessmen included the amount of FFV in stores (including the amount purchased, spoiled and disposed) as well as their thoughts on smallholders having access to formal markets and what consequences this entails for the supermarket business itself. A copy of the businessman interview guide can be found in Annex C: Supermarket/Businessman Interview Question Guide. The purpose of this second stage of the research, which had a shorter interview, was to focus more on perceptions of market accessibility and smallholders opportunities than was found in smallholder questionnaire. This was to help determine the role of formal and informal markets, and their relationships with those in power, in food and livelihood security in more rural communities.

4.1.1 Research Limitations

Although originally, the research was to be conducted on a first hand basis, the interview process was contracted to someone on my behalf. The Research Assistant lives in Kitale, one of the reference points of this research, and he has conducted previous (similar) research for Good Neighbors Insurance Community Program. A colleague, also living in the outskirts of Kitale and employed with USAID, suggested the Research Assistant to me.

The interview process was expected to be completed in December 2013, but was instead completed in February 2014. To ensure the information was conveyed correctly and ethics protocols were followed, the Research Assistant was required to mail me the hard copies of all interviews conducted, as per the contract. Once the hard copies were received, the Research Assistant was electronically available to discuss and clarify results, in order to ensure the robustness of the data collected.

The remainder of this chapter will focus on the summary, trends, findings and analysis of the different interviews with both smallholders and businessmen.

4.2 Smallholder Findings

4.2.1 Profile

Prior to engaging directly with the data, it is important to grasp a brief overview of those who participated in the interview process. As such, in total, there were forty-nine smallholder interviews conducted; the number of interviews conducted in each rural community is as follows: 11 from Matisi, 16 from Sirende, 9 from Moi's Bridge and 13 from Waitaluk. Twenty-six of the forty-nine participants were female, with the number of females in Sirende equal to the number of men, see Table 1. The average age of the smallholders interviewed was 50 years old, with ages ranging from twenty-six to eighty-

nine (see Table 1). Family sizes averaged around 6 people (with the highest number at 8 in Sirende), and average gross revenues around 30,000 KSh annually (approximately 370 CAD)[3], see Table 1.

Table 1: Summary of Individual Community Smallholder Profiles (average)

Community	Gender ratio (men: women) of interviewees	Family Size	Age	2013 Production of maize (# of bags)	Land Size	Gross Revenue (KSh)
Matisi	6:5	6.5	52.9	16.77	2.78	21,666
Moi's Bridge	5:4	6.2	54.3	11.67	0.88	21,000
Sirende	8:8	8	49.6	43.56	3.05	43,783
Waitaluk	3:10	6.1	49.4	20.27	1.54	35,500
Entire sample	*22:27*	*6.7*	*51.6*	*23.07*	*2.06*	*30,487*

4.2.2 Production

All of the forty-nine smallholders that were interviewed claimed to produce FFV and maize. The most common type of FFV in this case means kale ("sukuma wiki" in Kiswahili), cabbage, and onions. However, maize was always the largest cereal crop, as it is Kenya's staple crop. The average amount of maize collected is 439.59 kilograms per hectare,[4] which is exceedingly low (see Table 1). This demonstrates two significant power structures. The first is the inability of farmers to acquire the necessary resources in order to increase production. Many are unable to afford the fertilizers and organic matter needed to increase production, or lack large enough land holdings to produce at the levels needed to support food security or market engagement. Second, all of the smallholders in this case study were producing maize, as pressured by markets and the

[3] During the study period the Canadian dollar was worth roughly 81 Kenya shillings (KSh).

[4] Note: Hectare was the unit of measurement reported by smallholders. One hectare is equivalent to approximately 2.5 acres.

GoK's ongoing emphasis on maize as the country's dominant staple crop. This illustrates the loss of biodiversity in the cropping system and further depletion of soil of continual planting of the same crop. Yet, when asked about their production levels over a series of years, there was only one participant who hypothetically projected that their 2014 yields would be lower than their 2013 yields. This consequently raises the question as to why smallholders might have believed their yields to be stable or increasing over time, or at least that they felt 2014 would be a better yield year than 2013. The only thing smallholders had listed, as having a negative effect on their yields was the weather system, more specifically drought.

Overall smallholders were reacting to perceptions that 2013 had an unusually dry growing season while 2014 appeared to be more "normal." From March until May 2013, the Ministry of Environment, Water and Natural Resources in the GoK, reported depressed rainfalls where some of the worst conditions were seen in Rift Valley, as meteorological stations in the area recorded less than 50 percent of their previous ten year averages (Ministry of Environment, Water and Natural Resources, 2014). Clearly, droughts can severely negatively impact crop yields as the drought neglects to give crops the required nutrients to continue to grow. This is further emphasized in July as crops are maturing in the fields: maize cobs are filling and can benefit from rainfall at this stage before harvest. Recognizably the drought had detrimental effects on the crop yields of 2013. According to the Famine Early Warning Systems Network, which works across East Africa, including Kenya, maize developed more slowly than normal in Rift Valley and many households remain in a 'stressed' food security situation due to the seasonal increase in food prices and the early depletion of short rain stocks (USAID, 2014).

However, it is significant to note that the smallholders interviewed did not believe that this would occur again in 2014, as they projected their 2014 crop yields would be higher than 2013. Possible reasons for future production may be that the smallholders are assuming that the lack of any noticeable downward trend in production in the past years will not be interrupted. Yields of only 440 kilograms per hectare (as abovementioned) are about as low as they can be for maize. This yield reflects the minimum an unfertilized soil would produce under sub-humid rain conditions and can be sustained for many years. However, that said, even the 'normal' production range for Kenya of 1500-2000 kilograms per hectare rarely equates to food security for a household (which is why agronomists are always trying to get maize production closer to the "ideal" maximum of around 4000 kilograms per hectare using fertilizer, improved seeds, pest control, etc.). This further articulates the economic and ecological impacts of smallholder farmers' limited access to resources.

Finally, although respondents appeared to lack awareness or concern for climate change, farmers might also have been basing their optimism of future yields on statements from the Kenya Meteorological office which was predicting that the rains would be favorable in 2014 for western Kenya (GoK- Ministry of Agriculture, 2014). This may identify a barrier as smallholders are unaware of the effects of climate change and the possible mitigation and adaptation techniques that can be implemented by smallholders to maintain their production yields but have neglected to do so thus far. For example, even though the weather system (in other terms drought) was noted as affecting their crop yields, not a single farmer noted any precautionary measures such as irrigation, water harvesting, or planting drought tolerant crops or maize varieties that could be taken

in the future to prevent a similar result. Again, there may be a misunderstanding between the effects of climate change on yields and how that can forecast future yields. This can be further exposed as the smallholders interviewed only noted weather systems in the interviews, and no one discussed the specific term climate change.

Another common argument held by numerous scholars is land rights and the tenure of land affect agricultural production. The average land size for all communities is around two hectares, with the average number of maize bags around 23, see Table 2. Although this case study was intended to be inclusive, and therefore would have included land holdings of up to 10 hectares, such farm sizes were quite rare in the research. A high population density coupled with a demand for housing, commerce and infrastructure makes land units for smallholders' small and declining (GoK, Agricultural Sector). The largest farms in Kenya are found in the Rift Valley, held by political elites who were able to take over formerly colonial landholdings. The fact that political patronage is a key factor in determining access to land (in Rift Valley as elsewhere in Kenya) illustrates the power of the GoK in shaping the land holding inequalities.

Next, the food security estimate, also derived from Table 2, illustrates an approximate average of 300 kilograms of maize per person per year. As earlier mentioned, food security for a Kenyan household (primarily through maize) sees a 'normal consumption' around 1500-2000 kilograms (Muyanga et al., 2005). This demonstrates that food security is not occurring in these areas (as 300 kilograms is 2 percent of 1500 kilograms); it does not demonstrate the food security of certain communities in Rift Valley as the KFSSG states. It is commonly held that accessibility and ownership to arable land are necessary for adequate production (as well as political

stability and larger macro concepts) (Barrows & Roth, 1980). However, only 8 percent of smallholders reported that they did not own their land, this includes women smallholders. Although no one in this sample reports being a tenant or being landless, it still raises the larger question as to whether households own 'enough' land to meet their food security needs, especially as this land continues to decline. In this case study, the lowest maize production per person is in Moi's Bridge, which is also the community where the average land size is also the lowest (Table 2). Hence, the amount of land owned or accessed, for the purpose of this research, clearly has a direct and noticeable effect on production yields. This positive relationship is unsurprising.

Table 2: Summary of Smallholder Land Ownership and Tenure

Community	Land Size (hectare)	Household Size	2013 Production Yields of maize (# of bags)	2013 Production of maize (in kilograms)	Food Security Estimate (maize production/# of people in household)
Matisi	2.78	6.5	16.77	1509.3	232.2 kg/person
Moi's Bridge	0.88	6.2	11.67	1050.3	169.4 kg/person
Sirende	3.05	8	43.56	3920.4	490.1 kg/person
Waitaluk	1.54	6.1	20.27	1824.3	299.1 kg/person
Entire sample	*2.06*	*6.7*	*23.07*	*2076.1*	*297.7 kg/person*

4.2.3 Incomes

Alongside increased production for 2014, it is unsurprising that the same smallholders project that their incomes, specifically from farming, will also increase from 2013 to 2014. The average income from farming (maize and FFV), in 2013, was approximately 42,000 KSh (or 535 CAD) annually, representing roughly 20 percent of the families' total income (Table 3). Other activities that constitute the remainder of the family income were normally off-farm activities, with family members working in larger urban centers, as opposed to the rural community. Hence, even at a local level,

smallholders recognize the need to diversify their activities to increase their income. Yet, although there is definitely a role for off-farm employment as a way to diversify income, there needs to be further consideration onto rural livelihood diversification without necessarily traveling to large urban centers. All of the rural communities in this research are considerable distances from larger cities (e.g. Kitale or Eldoret).

Table 3: Smallholder Incomes and Costs: A Comparison between communities

Community	Gross Revenue from agriculture (KSh)	Agricultural income as % share of average total household income	Standard Deviation of agriculture's % share of household incomes	Monthly Operational Costs (KSh)	Fertilizer Costs (KSh/planting season)
Matisi	21,666	17	+/- 10.6	7,750	6,500
Moi's Bridge	21,000	17	+/- 9.3	4,514	2,922
Sirende	43,783	30	+/- 8.1	18,500	3,773
Waitaluk	35,500	15	+/- 17.4	2,133	2750
Entire sample	*30,487*	*20*	*+/- 11.4*	*8,224*	*3986*

Complementary to farm revenues, there are substantial costs associated with operating farms through the different inputs required to maximize outputs. Although smallholder production is based on family labor, every smallholder recognized labor and fertilizer as their largest expenses to farming (Table 3). Other considerable expenses included seeds and plowing costs. Only one of the smallholders interviewed did not use any type of fertilizer (including his or her compost manure). All of the remaining interviewees used a mixture of the following fertilizers: Diammonium phosphate (DAP), Calcium ammonium nitrate (CAN), urea and their own compost manure. All smallholders noted that there is a standardized amount of fertilizer to use of 50 kilograms per hectare. This information has been largely distributed the GoK, MoA and other

international organizations. The average cost of this amount of fertilizer is 3,365 KSh per bag, with the most expensive fertilizer at 4,500 KSh per bag. Of all of the smallholders who reported using fertilizers, all but one reported using fertilizer 90 percent of the time that they have had access to their land. However, although many of the smallholders identified that they do use fertilizers it is unlikely they are using the amount they have been told is necessary (e.g. 50 kilograms per hectare). Most farmers are unable to apply fertilizers at this recommended rate as the costs associated with the use of fertilizer are substantially high in comparison to the low yields (and relatively low rates of sale). In any case, even if smallholders were able to reach the 50-kilogram per hectare target or even exceed it, the environmental impact would be modest. The major impact of fertilizer use in the four rural communities in Rift Valley is financial and social as opposed to environmental. Regardless, smallholders who do apply significant amounts of fertilizer to their land do not recognize a significant increase in production yields. Hence, it is often seen as not profitable. There was only one case where the smallholder was not using fertilizers 90 percent of the time that they have had access to or owned the land; in this case they have owned or had access to the land for sixteen years and have only started using fertilizer within the past five.

Other than fertilizer, another important input factor on farms is the use of machinery: 78 percent of the smallholders reported using some type of machinery on their land (e.g. tractors and wagons); again the pollution effects of using machinery in these communities would be minimal. Out of the twenty-eight people who use machinery on their farm, not a single farmer personally owns the machinery. Rather, use of the machinery (often also including fuel used to operate the machinery) is paid for

immediately after use. Someone who is operating a larger farm close to, or within, the rural community often contracts out the machinery. However, since some of the rural communities are so remote from larger cities there is sometimes, and often, only one person who has the machinery and can contract it out to the smallholders. This represents numerous possible problems. First, with a monopoly on the machinery, the price can often be exploitative and unaffordable for smallholders. Yet, if smallholders are trained to use the machinery, and the machinery is only available at one location, smallholders may be forced to pay for the machinery well beyond their means. Second, if only a few larger farms own the machinery, and are also willing to contract it out, there may be conflicts of when certain farmers have access to the machinery. For example, at the beginning of the planting season, tractors are in high demand for plowing and weeding. However, with limited machinery, the inability to plant the seeds (within a given time period) may result in the loss of potential crop yields. Thus, although machinery often increases the speed of all aspects of farming (particularly plowing and possibly weeding in this context), there are unaccounted side effects that could be detrimental to crop yields, based solely on the availability of certain pieces of limited machinery.

A final farm input often used by farmers is labor, as is represented in the total inputs costs in Table 3. Although smaller farms tend to solely rely on household labor, some farms employ other laborers in the community to work on their farms. Unsurprisingly, those who have owned (or at minimum have had access to) more than five hectares of land have casual staff (employees who assist during peak times) on their farm beyond their individual or household labor (see Table 4). Only two households with less than five hectares of land made use of outside labor on their farm. Beyond the little

amount of land owned, another constraint restricting the ability to have laborers on their farm was household finances. Due to increasing costs of use of machinery simultaneous with decreasing crop yields (as was discussed previously), and the decreased income smallholders receive for their FFV, many smallholders noted that they were unable to afford laborers on their farm- even though it could be beneficial to their farm operations. As a result, even though the land operated may be less than others, there is still extensive pressure on families to conduct all of the necessary labor to reach their production standards. Therefore, there are a considerable number of farm inputs that have (obvious) direct impacts on the incomes of smallholders. Possible monopolies and costs of fertilizers, as well as other inputs, decrease the ability of smallholders to maintain their incomes while conducting the necessary farming practices to have successful production.

Table 4: Summary of Community Farm Inputs (labor)

Community	Household Size	% hiring labor	# of laborers hired	Associated Labor costs (KSh/day)
Matisi	6.5	50	4.25	200
Moi's Bridge	6.2	33	*no response*	175
Sirende	8	91	2.5	181
Waitaluk	6.1	38	1.5	175
Entire sample	*6.7*	*53*	*2.75*	*183*

In sum, agricultural production in the four communities between Eldoret and Kitale has a strong influence on the food and livelihood security of many of the populations. The tables demonstrate the low yields and high costs of inputs needed to increase or sustain these yields. This has a direct impact on food security and the amount of food that is available for consumption. One of the consequences of low production and the high costs needed to increase this production is livelihood diversification. Many

smallholders have resorted to participating in off-farm and non-farm activities to increase incomes, secure livelihoods and improve their individual and household food security and nutrition.

4.3 Individual, GoK and Donor Roles and Community Participation

4.3.1 Individual Participation

Prior to analyzing different perceptions of organizations within the community, it is necessary to discuss the role and the organizations of the people who do participate in them. The different organizations that the smallholders interviewed claim to be involved in includes Sustainable Global Gardens Agroforest, IFAD, MoA, the Good Neighbors Community Program and the Fountain Entreprise Program. Broadly speaking, each of the organizations aims to eradicate poverty among farmers, improve horticulture, and offer trainings and programs to farmers to enhance their farming skills. Sustainable Global Gardens Agroforest, IFAD, the MoA and Fountain Entreprise Program all consider themselves offering services to smallholders to improve access to markets (Fountain Enterprises Programme, 2014; IFAD, 2014; Ministry of Agriculture, Livestock and Fisheries, 2014; Sustainable Global Gardens, 2014). Many of the organizations in these rural areas appear to be considerably large, with Sustainable Global Gardens Agroforest being the largest association in Matisi having 73 smallholders, and the lowest number of people involved at twenty people in the Good Neighbors Community Program, also located in Matisi (noting that these numbers are indicative of smallholders' responses). The meetings are normally held on a weekly to monthly basis and are held in either churches or rotating to different members' households. On average, the length of time to travel to a meeting (often by bike or walking) is thirty minutes. For the people who do actively participate in their communities, not a single smallholder was able to

identify the funding of the operation and whether the organization operates under the GoK (with exception to the MoA) or any other organization. This raises questions around the knowledge sharing of the organization as one of its strengths. It can be assumed to be mildly concerning that smallholders are unable to recognize the role of different international (or national) organizations, if they are unaware of the role of the organization or, more importantly, who the organization is part of on a larger scale. More specifically, if smallholders are unaware of the purpose or role of a particular organization, they may have expectations that are not relevant to the particular organization, causing smallholders and organizations alike to be frustrated and disappointed with their results.

Since agriculture is evidently one of the most important factors to Kenya's GDP and overall smallholder livelihoods, some smallholders take it upon themselves to be active within the community. Being active in the agricultural community, regardless of the role, enables farmers to have access to numerous types of trainings and field days, but to also have a voice towards the agriculture sector within their community as well as regionally. Although being active in the agriculture community is encouraged, 56 percent of smallholders claimed to not participate with any organization, see Table 5 for a list of participants in each community. However, 63 percent of these farmers claimed that they would like to be participating in a group, if one was available. These statistics are alarming as there are organizations working in the different rural communities, with which some of their fellow smallholders participate. For example, the use of the term 'cooperatives' or 'producer groups' in any question throughout individual interviews was unanswered. In many cases, smallholders identified these groups as political tools,

wherein the wealthy become wealthier and the income disparity gap widens. Many smallholders in the area have therefore not seen any benefits from participating in these groups. Yet, in most cases smallholders are pressured into joining cooperatives or producer groups in order to reap the benefits of GoK or institutional programs or policies, in rare cases this perspective is presented in the literature (i.e. Freidberg & Goldstein, 2011 and Fischer & Qaim, 2012). In this sense, the numbers do not seem alarming, as the smallholders in this case study identify with cooperatives and producer groups more as a political tool as opposed to a resource useful for sustainable livelihoods.

A final point to identify is the case of Sirende (it is the closest of the four communities to Eldoret); it has the highest number of participants in this research, and has a 70 percent participation rate (amongst the smallholders interviewed) in different organizations, significantly higher than any other of the three rural communities identified within the scope of this research.

Table 5: Organization Participation by Community

Community	**Levels of participation of men (total number, %)**	**Levels of participation of women (total number, %)**	**Organizations**
Matisi	1, 17	2, 40	Good Neighbors Community Program
	0	1, 20	MoA
	1, 17	0	Sustainable Global Gardens Agroforest
Moi's Bridge	2, 50	0	MoA
Sirende	3, 43	4, 57	MoA
	0	1, 14	IFAD
Waitaluk	0	0	*N/A*

From a gender perspective, only eight women claim to be active in an agricultural organization within their community. No women interviewed from Moi's Bridge reported being part of an agricultural organization. Similarly, no women participated in Waitaluk; however this site also reported that no men were active in agricultural organizations within their communities either. This possibly addresses lack of gender empowerment in these communities, but perhaps also a lack of communication. Out of the organizations reported by smallholders, the Ministry of Agriculture claims to be in all four communities, Sustainable Global Gardens Agroforest indicates on its website that it is presently only in Matisi, while the Good Neighbors Community Programme simply identifies that it is working "Rift Valley regions" (Ministry of Agriculture, Livestock and Fisheries, 2014; Sustainable Global Gardens, 2014; USAID- Kenya Horticulture, 2014). Since there are cases of women active in different rural communities, the potential and actual number of other women to participate would seemingly increase. Yet, the number of women (specifically in ratio to men) in this case study is quite small, except in Sirende where the number of female participants outweighs the number of male, see Table 5. This is interesting from the standpoint that women's groups have been widely promoted in Kenya as a rural development tool, and in many communities women have traditionally formed self-help groups for agricultural labor, savings and loans, etc. (Empowering Women, 2012). Yet, these groups were either not identified by smallholders or they do not exist, either of which is a bit conspicuous.

As noted above, there are numerous benefits noted by the respondents for participating in groups. Some of these benefits (mentioned most frequently to least) includes feeling like they belong more in the community and are more united, to getting

financial assistance (e.g. loans or grants of capital as well as subsidies for inputs) and being able to receive knowledge and different trainings through different field days hosted by the organization. Notably, these benefits are dependent on smallholders' active participation in organizations and not their simple belonging (Fischer & Qaim, 2012). Although there are benefits to group participation, ten respondents (37 percent of the sample) stated that even if given the opportunity to join an organization they would not do so. Table 6 lists reasons smallholders stated they would choose not to participate in organizations. The most common reason (80 percent of those who do not wish to participate in an organization) was related to the perceived instability of the organization. This includes the organization's lack of finances but, perhaps more importantly, the poor leadership within a given organization. Relating these concerns to broader national level thoughts, worries about corruption and the inability to have a purposeful (and equal) say in organizations are important and fundamental characteristics smallholders discussed when participating within a particular organization. Besides the lack of stability in organizations, other reasons for not belonging to a particular group include the little crop yields that farms produce (creating feelings of inadequacy) to belong to a particular group and the lack of support from friends and family to participate in a given organization was recognized as important but virtually non-existent. Thus, there appears to be a certain culture surrounding the idea of participating in certain organizations, what they mean and the impacts on their families, as noted on their views of cooperatives and producer groups for example. For example, there may be (although not reported in this research) specific negative stigmas attached to certain organizations (e.g. perhaps the MoA) due to the affiliations with actors smallholders perceive as negative or untrustworthy (e.g. in this

case, the GoK). In order to counteract these (probable) misconceptions, certain policies and communications can be introduced to expand the knowledge and increase the membership of certain organizations.

Table 6: Identifying Reasons for Lack of Community or Organization Participation

Top 4 reasons for not belonging to a given organization	Indicated by those not willing to join an organization (%)
Instability of organization[5]	37.5
Little produce from small land	37.5
Financially unstable	25
Unavailability of organizations	12.5

4.3.2 Role and Participation of the GoK

Alongside the individuals' role in participating in different community organizations, smallholders were also asked about their thoughts on the role of the GoK, in terms of its policies, methods of implementation and future thoughts on the role (and potential participation) of the GoK in the agriculture sector. 100 percent of the respondents agreed that the GoK should be promoting farmers to enter markets, both informal and formal. However, respondents were much less likely to believe that the GoK actually delivers this expected support, with only 40 percent claiming that the GoK actually implemented policies to help smallholders enter (or gain access to) informal markets and even fewer (33 percent) believing the GoK assists smallholders to enter (or gain access to) formal markets. An interesting note is that four participants of the entire case study population claim that the GoK is providing assistance for the smallholders to gain access to formal markets and not providing this (or any) assistance to help

[5] Please note this question referred to organizations broadly and not necessarily to a specific organization.

smallholders gain access to informal markets. All others claimed that the GoK was strictly providing assistance to smallholders to gain access to informal markets as opposed to formal markets. Again, similar to participation in NGOs, no one from Moi's Bridge or Waitaluk reported that there is any government support for smallholders to gain access to informal or formal markets. These areas are far from both Eldoret and Kitale; however, Matisi (located even further from both Kitale and Eldoret) still had four respondents stating there was GoK support. This raises questions as to whether distance plays the most significant role of government intervention, and if it this is not the case, what are the major arguments for GoK participation in some areas as compared to others. Finally, even the two people who currently participate in the formal market do not feel that the GoK is helping them (or smallholders more generally) gain access to either informal or formal markets.

In order to determine policies or recommendations that the GoK could implement, smallholders were asked to discuss the different types of things they would like to see in order to assist themselves and their neighbors enter markets (Table 7). As is highlighted within this entire discussion, directly including smallholders in these types of discussions is beneficial as it provides them with the different sets of tools they actually require in order to increase production and improve the Kenyan agricultural sector. As such, some of the objectives and tools that the smallholders noted as potentially useful are currently being implemented (e.g. increasing inputs and enhancing the financing available to smallholders), although it is the case that it was only five participants who agreed that these tools are currently in action (only one of which is female). Although some tools and recommendations for smallholders currently exist, the following is a list

of the recommendations that smallholders suggested be implemented by the GoK to encourage more smallholders to enter markets, as is also seen in Table 7. This list includes providing capital (either through subsidies or providing smallholders directly with inputs), offering accessible markets closer to rural communities, a reduction of monopolies and the necessity to employ middlemen and finally, for the GoK to offer trainings to gain guidance and knowledge on crops and best farming practices. Only the top two expectations, and undeniably the most significantly highest ranking, were on specific financial assistance. All of these suggestions seem plausible from the outset, although some would require more capital than others. Yet, broadly speaking, these types of policies do not seem to be in place.

Table 7: Smallholder Expectations of GoK and Organizations

Community	GoK expectation	Totals of respondents who reported (%)	NGO expectations	Totals of respondents who reported (%)
Total Case Study population	Increase finances (e.g. loans)	45	Increase finances (e.g. loans)	62
	Increase input subsidies (e.g. fertilizer, seeds)	39	Increase input subsidies (e.g. fertilizer, seeds)	31
	Increase market accessibility for smallholders	8	Increase market accessibility for smallholders	7
	Increase trainings offered	8		

Although all these recommendations are not currently implemented, or at minimum if they are implemented smallholders do not recognize it, there are different

parts of each consideration that may be more feasible. For example, it is not surprising that farmers want capital to assist with their farming. However, this so-called capital can be distributed to smallholders in several ways, there are at least two ways that were reported. First, capital could be subsidies for inputs such as fertilizer or seeds. As abovementioned, the scarcity of machinery may lead to rural conflict over the monopoly some households have over this equipment or the inability of farmers to plant or harvest in a timely fashion. This is not to suggest that the GoK must necessarily begin to give each smallholder his or her own machinery. Rather, communal machinery or subsidies for rural communities (including rural organizations) can purchase more machinery that can be used. A second possible aspect to providing smallholders with capital may be through subsidies on produce. Instead of directly providing smallholders with income or providing subsidies on inputs they deem sufficient, the GoK can offer discussions and roundtables with smallholders to further discuss market prices and increasing farmers incomes' through price control. Hence, although there are large obstacles and constraints to providing capital to smallholders, there are numerous different approaches the GoK can take to do so.

A second example of a policy that may be too broad but can be further divided, as discussed by smallholders, is providing trainings and guidance to smallholders to improve their farming practices and to network with other smallholders in the community. Although there are large numbers of smallholders across Kenya who may benefit from these types of trainings, such implementation can be costly and time consuming, which establishes the issue of how to (re)build a viable agricultural extension system. One way to possibly increase the effectiveness of trainings would be to do a

pyramid approach (Ellis, 2001; Obudho, 1983). Here, trainings could be offered to community leaders who then disperse the knowledge to smallholders. This would decrease the costs, resources and time needed to offer trainings to the entire rural community by simultaneously providing the trainings to the most vulnerable. Thus, although smallholders have defined (often) large protocols or strategies for the GoK to apply to increase their agricultural productivity, there are smaller and more feasible strategies that can be applied to reach the same end.

A final consideration of the role of the GoK is the macro-stability of the government structure itself. With the violence after the December 2007 elections, undoubtedly, agriculture and increasing agricultural productivity was not the largest concern of the GoK, rather the conflict had detrimental impacts on agricultural resources, more specifically land and access to it (FAO- Initiative, 2014). However, even with the most recent elections (in 2013), only two people claimed that the GoK has changed their policies or initiatives on the agriculture sector in Kenya. In other words, 96 percent of smallholders interviewed believe that there have been no significant changes, nor have they seen any significant benefit from the GoK or MoA agricultural policies in the past year, five years or ten years. Expectedly, the two people who have seen a change in GoK or MoA polices were the only two people currently participating in formal markets (one from Matisi and one from Sirende). The changes they report to have seen are being provided with increased funds and more training offered to smallholders.

4.3.3 Role of NGO's

"I wish that international organizations would bring us what they promised after five years."

The quote, by one of the smallholders interviewed, mentioned above presents an interesting dynamic between smallholders and international organizations. It clearly demonstrates that international organizations are active in the community, but there are misunderstandings, constraints and things that have been neglected from both perspectives. In order to gain further insight into smallholders views of the role of international organizations, similar questions asked of the GoK were asked of the role of international organizations in assisting smallholders in their agricultural practices as well as entering formal and informal markets.

Although participants agreed that there were multiple strategies and opportunities for the GoK to offer assistance to them, the only role the smallholders currently identify for international organizations is the provision of funds (e.g. loans), see Table 7. This represents an interesting conflict between the roles of international organizations (from their perspective) and their actual contributions (or expected contributions) to rural communities. It is the case that many different international organizations (including the ones that are found in the four communities interviewed – e.g. Sustainable Global Gardens Agroforest, IFAD and the Fountain Enterprise Program) have activities that go beyond simply providing funds for smallholders. For example, although Sustainable Global Gardens Agroforest has established a micro-finance system in some rural communities, they have also participated in tree planning, multi-story gardening, composting methods (as a resource to fertilizers that may be unaffordable) and sustainable land management practices (Sustainable Global Gardens, 2014). Hence, although one aspect of this organization is to financially assist smallholders, the organization also plays a larger role in the rural community.

Although it remains the case that most smallholders reported that international organizations should be merely providing funds to smallholders, 80 percent of smallholders concluded that the international organizations working in their communities were in fact already doing this to some scope within their respective rural community. However, although providing financial gifts appears to be the best known or most appreciated role of international organizations (from the perspective of smallholders), when asked what smallholders would like to see from international organizations, a few smallholders (5 percent) did claim that they would like to see an introduction of trainings and field days offered by international organizations to both gain knowledge of farming practices but to also provide an opportunity for smallholders to network with other farmers in their rural communities, something that the organizations themselves note as a priority. Again, this raises an interesting point as many of these organizations, including the Sustainable Global Gardens Agroforest organization, which has smallholder involvement amongst the respondents in this research, does participate in offering trainings to different smallholders. Therefore, there seems to be a misunderstanding or perhaps a lack of proper implementation, on the role of the organization, to this type of assistance or arguably, that the demand from smallholders far outstrips the ability of NGOs to supply it.

Beyond the types of policies smallholders would like to see from international organizations, the numbers between international organizations and the GoK are interesting. In comparison with perceptions of the GoK, which respondents universally agreed had a role to play in supporting smallholders' market ambitions, only 66 percent of respondents believed that international organizations can offer assistance to

smallholders entering the formal market, and many fewer (29 percent) believing that international organizations should assist smallholders entering informal markets, see Table 8. An important aspect to highlight of these results is that the group of respondents most likely to report that international organizations help smallholders enter the informal market were largely from Waitaluk, where there was actually no reported smallholder participation in either NGO or MoA groups. Particular reasons for this may be two-fold. On one hand, there may be skepticism regarding the MoA and GoK as a whole or on the other hand, perhaps a direct bad experience with the MoA or GoK itself. Furthermore, no one in Waitaluk considered that the GoK was assisting smallholders to enter formal or informal markets. Overall, unlike the GoK, where 42 percent of smallholders agreed that the GoK does have policies to assist smallholders, only 52 percent of smallholders believe that international organizations are assisting them enter informal markets. Similarly, of the total population of smallholders in this case study, 42 percent claimed that the GoK has policies to assist smallholders enter formal markets, but only 21 percent believe that international organizations are actually assisting smallholders enter formal markets. Again, this represents a clear disconnect between the roles of international organizations in different rural communities and the expectations from smallholders. Smallholders and those who are executing different programs and projects do not appear to have the same vision of international organizations, indicating a problem that needs to be addressed. By neglecting to recognize the inconsistencies represented by both actors, in providing assistance, the overall assistance may be inefficient and ineffective resulting in an inefficient use of money as well as time and energy spent or perhaps the benefits are

accruing to a very small part of the population, as it appears no beneficiaries of the NGOs' interventions were interviewed.

Table 8: Perceptions of the assistance from GoK and NGOs for smallholders entering markets

Community	**Smallholders' Responses agreeing to the following claims (%)**			
	Formal markets		*Informal markets*	
	GoK assist smallholders	NGO's assist smallholders	GoK assist smallholders	NGO's assist smallholders
Matisi	43	25	73	56
Moi's Bridge	13	14	13	13
Sirende	71	10	71	31
Waitaluk	0	36	0	17
Entire sample	*31.75*	*21*	*39*	*29*

Although there is a distinct divide between the respondents' perspective on the purpose of international organizations and their actual implementation strategies, two respondents (both female, both from Matisi) reported being satisfied with the role of international organizations in their community- in this case. In this analysis, both of the smallholders from Matisi reported that they received sufficient funds from international organizations. Yet, interestingly, neither smallholder claimed to currently belong to an international organization, only one of which reported they would join if one were to become available. Furthermore, similar to responses on the GoK, only one male farmer claimed that role of international organizations in their community has changed or significantly developed within the past ten years, five years or one year, as he believed that certain organizations have increased their funds to smallholders in his community.

A final consideration is to reflect on the smallholders seeking assistance from either the GoK or international organizations. Only one person claimed to have ever actually gained assistance from the GoK or some other institution. Yet, throughout

discussions, increasing trainings and the knowledge capacity of smallholders appears to be something that the smallholders were advocating for. In all four of the rural communities analyzed, some type of agricultural training has in fact been provided. Another possible explanation is the term assistance has been interpreted strictly to mean "financial assistance," and therefore, smallholders do not feel as though they have received financial assistance (some may have not), but this may also include subsidies.

In sum, it is important to consider the different actors who have the ability to provide assistance to smallholders in rural communities in western Kenya. Yet, it is also debatably equally important to recognize that the solutions or the needs of rural communities may be different on a case-by-case basis on the local contexts of each of the communities. There is no universality of implementation or strategies. On the other hand, interviewing smallholders and creating discussions to understand the needs of communities, for sustainable agricultural growth, will be more effective, for all parties involved, in the long-term. It is undeniable, as can be deduced from the smallholders, that the GoK and non-governmental institutions or organizations working in rural communities do have an effect. As the quote addresses, smallholders are dependent on these agencies to provide, to some degree, a level of food and livelihood security, in the four rural communities in Rift Valley.

4.4 Smallholder Informal and Formal Market Involvement

"I wish, as I am a farmer, that markets were more closely available to the farmer."

The quote above, from a smallholder interview, perfectly defines the lack of relationships of smallholders with markets (largely formal markets), as the physical and social distance to them is too significant. Moving beyond the individual farming unit and the different actors who can assist farmers entering different types of markets as well as

strengthening their skills and knowledge in agriculture, it is important to analyze smallholders' direct involvement in markets, and some of the barriers and opportunities within it.

4.4.1 Participation

Smallholder participation across both formal and informal markets varies between communities. Prior to describing their own involvement in informal markets, all of the respondents agreed that the informal market is characterized by interactions of farmers with consumers buying or selling their produce in a small-scale environment. A large proportion of the respondents (36 respondents or 73 percent) indicated they sold at least some produce in informal markets (Table 9). The rate of involvement in the informal market ranged from 50 percent of respondents in Waitaluk, to 64 percent in Matisi, 78 percent in Moi's Bridge, and 100 percent in Sirende. For those who do participate in the informal markets, most have done so since the early 2000s, with only four people participating in the informal market prior to 2000. Also, the large majority of women interviewed did not begin their interactions with the informal market until 2009- with four of them beginning to participate in the market in 2012. The number of years involved in markets averages around 5.5, with the most recent access to markets with Sirende at 3 and Waitaluk having the largest participation with closer to 9 years (Table 9).

Table 9: Smallholder Sales into Markets Participation

Community	Rates of informal market participation (%)	Rates of formal market participation (#)	Years in markets (#)	Market involvement (men)	Market involvement (women)	Market income as % of household income
Matisi	64	0	3.7	5	2	41
Moi's	78	0	5.7	4	3	31

Bridge						
Sirende	100	1	3.3	1	1	39
Waitaluk	50	1	8.7	2	5	37
Entire sample	*73*	*2 (total)*	*5.4*	*3*	*2.75*	*37*

Although many of the smallholders interviewed currently participate in the informal markets, there is still 25 percent (or twelve people) of the total population interviewed that did not report any participation in any markets and produce purely for their own subsistence. Of the twelve people, five are female. All twelve do note that they wished they could be participating in the informal sector but were unable to participate due to their lack of surplus produce. Similarly, all of the smallholders interviewed wished to be a part of formal markets as well, noting the increased profits of participating in such a market.

Like the questions pertaining to the informal market, respondents were asked to describe the formal market prior to identifying their engagement with it. All of those who answered the question correctly recognized the formal market as large-scale. Although this was the only distinction made by the smallholders interviewed, it should be assumed that formal markets for smallholders also depends on contracts and with more structured production requirements, as opposed to that of the informal market. However, whereas most of the respondents were engaged with informal markets, there were only two interviewees currently participating in the formal market. The profiles of these two participants include one female and one male, wherein one member is part of the MoA and the other does not participate with any organization. Both entered the formal market in 2008 and report that sales to what only one smallholder reports that the formal market accounts for approximately 50 percent of their total annual income. Furthermore, both of

the smallholders who participate in the formal market, use machinery, have at least one hired laborer to assist with farming and are both from Moi's Bridge. In comparison to the other three communities of this research, Moi's Bridge is the only one roughly equidistant between Eldoret and Kitale (50 kilometers from each). It is also important to note, although the sample size is small, that only one of the two people who worked in the formal market also participated in the informal market.

The question that arises from the lack of participation of smallholders in formal markets is "why?". In its broadest sense, agriculture in Kenya is largely unprofitable. The GoK tends to favor, and have been compelled to adopt, structural adjustment policies (SAPs) that manage the food economy to favor cheap, urban food (Freidberg & Goldstein, 2011). This does not incentivize smallholder farming, rather large scale commercial farming. The adoption of SAPs and the GoK's inherent lack of interest in smallholder farming helps to explain the lack of extension services, roads, training and other resources smallholders need to enter these markets. This, understandably, is problematic as smallholders are the majority of the population in Kenya and those who are most food insecure.

4.4.2 Market Advantages

The most noted advantage of market participation (be it formal or informal) is the income derived from selling one's produce (including maize and FFV) in it. The average monthly gross profits gained from informal markets, as estimated by participants, is approximately 37 percent of the family's monthly income, see Table 9. As abovementioned, profits from the formal market average around 80 percent of total income, albeit only for the two households who participate in formal markets. Furthermore, all of respondents identified that there was larger income to be gained by

interacting with the formal market, but this comes with its own inherent set of challenges, which will be further analyzed momentarily.

Complementary to income, there are other benefits that smallholders identified as important with their participation in informal markets. As such, almost all of the interviewees commented on the informal market as largely reliable and with sufficient demand to obtain regular income- even if it is small in comparison to what the formal market might offer. Another advantage is the immediate cash flow from the informal market, as once the produce is sold the smallholder receives the money instantaneously for the produce. As a result, only two respondents reported ever considering leaving the informal market. The incentives noted for staying include that there is no minimum amount of produce required to meet the demands of the informal markets and the readily available markets to operate their family run kiosks. Therefore, it is undeniable that there are evident advantages for smallholders to be participating in markets whether they are formal or informal.

4.4.3 Market Disadvantages

Although there are advantages of participating in markets, largely income, there are also major challenges to participating in formal markets, and at times even the informal market. Some of the most significant challenges, as identified by the smallholders, include financial uncertainty (due to price fluctuations, delays in payment, and high costs for labor or inputs) and the difficulty of generating a consistent surplus of produce that can be sold (especially to formal markets that might demand a minimum quota for participation). Factors identified as limiting surplus production included the small farm sizes, the risk of post-harvest losses and food spoilage before or during transport (even over the shorter distances to reach informal markets), and inconsistent

weather affecting crop yields (Table 10). All of these barriers can be interconnected; however even one of these may be detrimental to involvement in any market.

Table 10: Identified Constraints to Entering Markets

Challenges to entering markets		**Total population identifying challenges (%)**
Informal	Price fluctuations	62
	Little income received from produce	18
	Low crop yields	15
Formal	Low crop yields	59
	Delay in payment	45
	Small land sizes	18

A more in-depth analysis in each of these barriers, as recognized by smallholders, is crucial to understanding why they impede access to markets. The price fluctuation of produce in more formal markets is continually moving. This is dependent on supply and demand models, but also on the overall fluctuation of prices at the market level from a possible variety of reasons that include but are not limited to national policies and pressures, seasonality of supply and demand and/or high transport costs. Without a consistent price set on produce, the fluctuations cause smallholders to at times create produce that is more expensive than its selling price. It is often the case that smallholders do not have the capital buffer or access to credit to afford such drastically changing price fluctuations. Second, many smallholders cannot enter formal markets (or consider both markets) since they are unable to harvest the amount or quality of produce required to fulfill a contract (with amounts pre-determined and fluctuating) with a formal market.

Third, post-harvest losses are continually on the rise with lack of machinery to harvest at appropriate times (as previously discussed), but also due to the lack of storage facilities to hold the produce once it has been harvested. Fourth, inconsistent weather, which is recognizably becoming increasingly apparent, often negatively affects crop yields, leading to decreased yields. Fifth, many of these smallholders (again as previously mentioned) do not have the incomes to hire labor outside of the household. As a result, there is increased pressure on households to conduct the entire farming cycle from planting to harvesting to marketing, which could be more efficient with the assistance of hired labor.

Even though there are numerous challenges and barriers currently preventing smallholders from participating in formal markets, only 13 percent of interviewees claimed that they would not like to participate in formal markets. However, only 12 percent of respondents believed that the formal market would be profitable for them. The most common reason for this was the perception that there is too long a delay in payments in the formal market. Most smallholders still seem to find the immediacy of the payments of produce a priority in determining the amount of income that can be derived from a given market.

4.5 Availability and Accessibility to Markets: Smallholders' Perspective

After smallholders identified the different barriers and constraints to entering formal markets, subsequent questions discussed possible policy interventions or recommendations to the barriers they identified. Some of the policies that smallholders suggested to overcome the barriers as well as encourage overall agricultural growth and simultaneously increase access to formal and informal markets include: funds provision strategies, a restructuring of informal and formal markets, encouragement for farmers to

participate with international organizations, controlling the price of produce, eradicating corruption at the national level and ensuring equality amongst all land holders (large, medium and small).

More specific to markets, smallholders were asked to respond to policies they would implement to encourage participation in informal and formal markets, if they had the necessary tools to do so. Some of these responses are similar to improving agriculture more broadly; however, some of the responses were different. The most common responses include providing capital, markets that are welcoming to involving new participants, a reduction in transportation costs and creating roads to easily transport their produce (Table 11). Also, although inputs were widely used across the sites, only participants in Waitaluk specifically mentioned machinery. Similarly, only people in Moi's Bridge specifically identified the type of funds provision they would like to see as loans.

Table 11: Recommended Policies to Foster Market Accessibility

Policies recommended for implication	% of respondents who identified policies
Funds provision	45
Inputs	30
Loans	20
Markets	10

The introduction of infrastructure is an important element and current impediment to smallholders gaining access to markets. As a result, a specific section on the question guide was dedicated to infrastructure (or the lack of it) and 100 percent of respondents agreed that the role of infrastructure is an important element of gaining access to markets

as it ensures the produce reaches its given destination. Hence, the only way for smallholders to access the markets is for them to transport their produce. However, in order to do so, all smallholders look for roads (in any condition as someone noted) to move their transport to large markets. Yet, often these roads do not exist or are of very poor quality, frequently inaccessible during the rainy season or served only by bicycle taxis (boda boda). It increasingly becomes a challenge to access the limited roads without a mode of transportation to use. Many reported that they do not have access to the types of transportation needed on these roads (e.g. pickup trucks or lorries). Also, the high costs of using vehicles or middlemen limits the accessibility of formal markets. Consequently, most smallholders conveyed the need of improved roads from their communities to larger cities, but also for subsidies towards the types of machinery and modes of transportation that can be used to transport FFV on these roads.

Although improving roads is the most influential aspect of infrastructure allowing smallholders to actively participate in markets, there are other aspects of infrastructure that are important to determining the accessibility and availability of smallholders to markets. For example, having electricity to better operate different farming practices is important. Electricity also helps with storing produce, as refrigeration lengthens the spoiling date of FFV; yet, only 20 percent of the smallholders interviewed use or have access to electricity. Another aspect of infrastructure also related to keeping FFV is the storage containers themselves. Depending on the amount of produce, it may be difficult for some smallholders to keep their produce. However, in this research, as the amount of produce is relatively small, 70 percent of smallholders were able to store their produce in personal containers, 10 percent store in public storage facilities, 10 percent do not store

any (consequently consuming or selling their produce immediately) and 10 percent of respondents chose not to answer. Therefore, it is undeniable that there are serious constraints to smallholders' accessibility to markets, largely concentrated on the poor or lack of accessibility to infrastructure.

All in all, these four rural communities provide a grassroots view of the different agricultural livelihoods as well as their perspectives on donors, including the GoK, and the barriers to participating in informal and formal markets. The inclusion and promotion of markets is widely known, across the development agenda, to benefit and impact the food security of rural populations. This analysis is not to be presented as a universal interpretation of what smallholders recognize as the barriers to participating in formal markets; but rather to identify that a contextual, small-scale analysis of different communities is needed to know how to apply policies or subsidies for smallholders to participate in markets as they play a significant role in the livelihoods, as well as the overall food security of rural populations.

4.6 Supermarket Analysis

A secondary aspect of this research is to identify the different thoughts, conceptualizations and interpretations of smallholders from other actors along the value chain. In this case, to do so, four personnel working in supermarkets participated in a questionnaire targeting what they envisioned the role of smallholders to be in agricultural value chains and formal markets as well as their personal objectives for assisting smallholders.

4.6.1 Market Profile

The four supermarkets that participated in the questionnaire include Siam Supermarket, Transmatt Supermarket, Naivas and Tusky's all located in Eldoret. On

average, each store carries approximately 500 to 700 kilograms of FFV at any given time, occupying anywhere from 40 to 50 percent of the entire store. All of the FFV, in every store, was delivered on a weekly basis. To maintain their fresh standards as well as to keep customers (as noted by the businessmen themselves), three of the four businessmen reported having to regularly dispose of spoiled FFV. Two of the locations only discard around 15 kilograms of FFV every week, whereas the Tusky's businessmen claimed to dispose of 200 kilograms of FFV every week, representing a significant 28 percent of total FFV that is wasted on a weekly basis.

4.6.2 Supermarkets and Smallholders: A Businessmen's Perspective

Beyond the basics of the FFV in certain formal markets, the interviews aimed to further understand what businessmen in these positions expect from smallholders. As such, each store claimed that the FFV from smallholders accounted for approximately 50 percent of total produce sold and is often brought in through middlemen collecting the produce from cooperatives serving a larger landholding. The modes of transportation often used by middlemen are pick-ups or lorries, and in one instance a farmer personally transported his produce to the store by bicycle.

Other aspects that the supermarket respondents were asked to discuss included contracts between the supermarket and smallholders. Only two of the stores (Transmatt Supermarket and Tusky's) require legally binding forward contracts with smallholders. While such contracts are supposed to be legally binding, both businessmen agreed that if the smallholder neglects to provide adequate produce, as per his or her contract, the business simply looks for other smallholders to acquire the needed FFV, which is normally at a lower price. Hence, the role of contracts does not appear to be formal or binding. As a result, the vulnerable contracts may pose a threat to supermarkets, if they

are unable to obtain the produce to meet the supermarket demand but also a threat for smallholders, as the supermarket appears to have free range to negotiate its contract or change its requirements at its own discretion. Hence, although certain supermarkets are including smallholders' produce in their store, there are still policies that could be implemented to strengthen the relationship and trust between smallholders and supermarkets.

4.6.3 The Informal and Formal Market Distinction

One of the distinctions that smallholders made between informal and formal markets was the immediate cash flow from the informal markets and the delay in payment from formal markets. Three of the four businessmen agreed that the supermarket only pays the smallholder after their produce is sold by the store. Inherently, this raises questions concerning the guarantee of whose produce is sold (if the FFV is presented in bulk) and the transparency of who consequently could or should be paid. Even beyond these initial questions, if supermarkets are unable to sell all the FFV, their active disposal of spoiled FFV could have significant impacts on smallholder incomes, which might have been higher in the informal market. It must be noted that one supermarket (Tusky's) did claim to pay the middlemen and the appropriate smallholder as soon as the FFV is distributed to the supermarket. All forms of payment, from each supermarket, are disbursed in cash.

Although smallholders recognize a difference between informal and formal markets, all of the businessmen describe both the formal and the informal market as having the same broad function: to sell produce. However, all four also noted that supermarkets should (and could) play a more active role (although how they were to do so was not explicitly expressed) in encouraging smallholders to participate. The techniques on how to do this were relatively vague, including comments such as ensuring 'we' buy their

produce. However, one interviewee did note that improving infrastructure, especially for communities located in the most remote areas, would allow for increased participation as well as decreased spoilage which leads to higher incomes. Furthermore, all four businessmen also explained that there is an incentive to attract more smallholders to supermarket value chains as it is an attractive business model and consumers like knowing that their consumption and purchases are coming from smallholders.

Thus, there is value-added to interviewing different actors in the agriculture value chain. There are similarities in recommendations for smallholders to be active, such as increasing infrastructure. Yet, there are also discrepancies that must be further discussed including the non-binding aspect or flexibility of contracts and the different brokerage or payment methods. These four businessmen stated that they clearly wanted to increase the role of smallholders, if anything for the image that their supermarket represents. However, there are situational problems that need to be addressed in order to provide an incentive for smallholders to participate in these markets.

The purpose of this research has been to demonstrate the need to consider local contexts when providing agricultural assistance and improving the accessibility to markets. All four of the rural communities identified are relatively close to one another. There are similarities, but there are also significant differences that advocate for the importance of a local context. Specific cases where very few people are participating in the formal market or (as in Waitaluk) where no one is currently participating in farmer organizations, highlight an opportunity for greater involvement. This process is in itself tedious. Incorporating other actors across the value chain furthers the complexities and challenges for the GoK, non-governmental institutions, supermarket businessmen and

smallholders alike. Yet, this may also be one of the only tactics that ensures the needs, at a community level, are met. Once the groundwork is complete, more regional implementation strategies can become a focus. Although this work may be tedious, it directly identifies the needs of smallholders and by meeting these; it will create a long-term impact on the sustainability of Kenya's agriculture and food secure populations of the rural communities in Rift Valley.

Chapter 5: Conclusions and Policy Considerations

5.1 Conclusions

This section summarizes the major findings of the previous chapter. By concisely identifying the results, this has the potential of assisting the GoK and non-governmental institutions target appropriate policies and programs for the rural communities surrounding Rift Valley.

5.1.1 Summary and Key Findings of Case Study Analysis

The main conclusions that can be drawn from this case study analysis focus on the challenges smallholders in the rural communities of Rift Valley experience, and the role and impact of the GoK, institutions, and informal and formal markets in livelihood and food security for these populations

First, the most significant challenges smallholders identified were the low yields of staple crops from their land. This, as recognized by smallholders, is attributed to the weather system inconsistencies and high costs of inputs. Yet, implicitly, the lack of land itself seems to be an issue (e.g. in Moi's Bridge, land per capita is the lowest). The areas of semi-arid and arid lands are increasing across Rift Valley, already challenging food security. Although the study communities, are not currently exposed to semi-arid and arid conditions their production yields are clearly not optimal. If the climate conditions continue to trend towards semi-arid, the amount of fertile land will decrease. A second concern on land in these communities is the amount of fertilizer needed to increase and sustain maximum yields. Many organizations seem to have promoted, as reported by smallholders, a standard rate of 50 kilograms per hectare to increase their yields, which most smallholders reported they were unable to afford. The cost of fertilizers outweighs the income derived from agriculture in this case study. Hence, smallholders are often

constrained from applying fertilizer, due to the financial costs, and only large-scale farmers have the ability to afford and apply fertilizer to their land. In any case, if smallholders were able to apply or exceed the recommended 50 kilograms per hectare, the ecological implications would be modest.

Beyond natural and ecological constraints such as lack of land and fertilizers, many smallholders, as noted in the previous chapter, were unable to afford hired non-family labor on their farms, which constrains the amount of produce that can be properly harvested as the labor force required for proper harvesting is reduced. This lack of labor appears to be another socio-economic distinction between small-scale and large-scale farmers (Gray and Dowd-Uribe, 2013). Delayed seeding or late harvest can significantly impact the quality and quantity of produce. However, labor, often that which is non-familial, is not free and so, smallholders are unable to meet these financial requirements. A final input consideration many smallholders across all four rural communities discussed was the lack of machinery. All farmers who use machinery were renting it from another (often larger) farm within the community. The limited availability of machinery again prevails as a constraint to increasing productivity and yields. There may be some criticisms as to the increase use of machinery significantly affecting the climate through increased pollution; yet, the environmental impacts of the machinery (e.g. tractors) would be modest and effective tools to increasing productivity yields. In sum, the smallholders in the four rural communities surrounding Eldoret and Kitale identified the barriers to their production yields, largely on the lack of land, and the cost of the inputs and labor required to increase them.

Second, smallholders noted interesting conclusions concerning their community participation in the GoK and other international and non-governmental agencies. Although many smallholders claimed to be active within their community, 56 percent of the respondents (27 households) reported they were not part of any organization. The benefits from participating in groups, as some smallholders acknowledged, is the importance of training or field days and the subsidies that were provided to some. A majority of respondents (63 percent) who were not members of any group indicated that they would join one if they were given a chance. However, a sizeable group (10 respondents or 37 percent) of the households not currently group members stated that even if they were given the opportunity to be part of such an organization, they would not. Their reasons include the lack of stability, possible corruption or broader more social and cultural frustrations or constraints. This represents an interesting power structure. The group membership of smallholders in certain non-governmental institutions is irrelevant; rather participation rates are considered most important (Fischer & Qaim, 2012). However, significant involvement requires membership fees or time commitments, things smallholders are unable to sufficiently provide. Furthermore, these institutions tend to promote the use of cooperatives and producer groups; in fact their establishment is often dependent on them (Fischer & Qaim, 2012). This study confirms the observations of work like Fischer and Qaim (2012) that cooperatives are seen as politicized tools as opposed to rewarding and liberalizing. The notion of a cooperative as a tool of exploitation does not appeal to smallholders nor does it advance their well being. Thus, many smallholders choose not to participate in institutions who advocate such policies. However, this also produces a negative side effect as the gap widens between

neighboring smallholders and large-scale farmers. Smallholders who have the time, ability and interest to participate in these institutions reap the benefits of them whereas those who perceive (be it true or false) institutions as negative or choose not to participate are further left behind with even less access to inputs, resources or training.

Although some smallholders do not participate in organizations, it is interesting to conclude that all interviewees agreed that the GoK and other non-governmental institutions do have a role to play in enhancing agricultural productivity and livelihood diversification, which is known to have direct impacts on food security. Smallholders from all of the four communities were seeking to increase the funds (be it loans or subsidies) available for agriculture and to decrease the costs for the desired agricultural inputs (e.g. seeds, fertilizer). The provision of funds, from the perspective of the smallholders interviewed, was the largest purpose of non-governmental institutions. However, many also claimed that they would like to see an introduction of field days and trainings to assist them in improving capacities but also as opportunity to network with neighboring rural smallholders.

Next, the case study found that smallholders were quite involved in the informal market in the rural communities in Rift Valley. Those participants not involved with the informal markets were simply using their yields for their own consumption. Yet, all of these smallholders (25 percent of the total population) that are not currently involved with the informal market wished to be doing so. Kenya's colonial history articulates liberal dominance (Ahluwalia, 1996). Farmers tend to be interested in markets, albeit some may not be involved due to their mistrust or frustrations with previous experiences. This speaks to the power relations between smallholders and 'controlling' markets. Yet,

the expansion and desire to participate in markets is not bizarre or uncommon in this context.

Undeniably, there are several advantages for smallholders to be involved in informal markets. First, the income generated from selling their produce is notable. On average, selling FFV and produce in informal markets accounted for up to 37 percent of the family's monthly income. This also highlights the significance of livelihood diversification and off-farm and non-farm activities in these rural communities. Since, on average, agriculture accounts for only 20 percent of a family's annual income in the sample size, this data does confirm that smallholders are already highly diversified. This is consistent with evidence across much of SSA, but what is striking in this circumstance is that Rift Valley is considered to be an area with an abundance of arable land and thus high agricultural and market potential (Kenya Food Security Steering Group, 2012). As the GoK advocates for cheap, urban food, smallholders are forced or reactively seeking other forms of employment, both off-farm and non-farm, to generate income to subsist (Freidberg & Goldstein, 2011). Complementary to income or the lack thereof, many smallholders also addressed the reliability of the informal market as well as a place where the small amounts of FFV and maize they can harvest can be sold. A final observation, although interestingly not explicitly discussed by smallholders, is the role of the informal market in increasing food security. On many farms, smallholders were limited to producing one or two crops indicating a loss of crop biodiversity, and the need for other food to meet their dietary needs. The incomes raised by smallholders enables them to purchase other FFV and produce in the informal market (items that they themselves do not produce) to increase their food security and nutrition.

Although there are distinct advantages to participating in markets, there are also clear disadvantages that prevent the smallholders in Rift Valley from achieving food and livelihood security through their market involvement. Some of the most notable constraints noted include the lack of surplus produce, price fluctuations (which creates financial instability), inconsistent weather patterns, transportation costs and post- harvest losses or food waste (a result of the inability to transport and store food). In many cases, smallholders can do many things 'right' and still have a poor harvest due to environmental risks and political decisions that are out of their control (Gray and Dowd-Uribe, 2013). Droughts or floods are increasingly common as climate becomes variable across Kenya and SSA. Furthermore, lack of interest in the development of smallholders from the GoK, due to the adoption of SAP policies and preference of large-scale farms, decreases the likelihood of extension services or reasonably priced inputs to be accessible to smallholders. These are large and considerable constraints beyond smallholders' capacity. More so, although these barriers may be consistent across other rural communities in developing countries, it is important to recognize the needs of the specific region and the best ways to address them.

As a follow-up to this type of analysis, the smallholders were asked to discuss possible policy interventions or recommendations they would like to see implemented in order to mediate the barriers they identified to market access. Some examples included funds provision strategies to increase access to resources and national assistance in controlling the price of produce locally and nationally. It is unsurprising that the majority of smallholders identified the provisions of funds as the highest recommended policy. That being said, it is important to recognize that it was not only direct funds, but also

other subsidies on inputs as well as a an emphasis on training and extension services by the GoK were discussed.

In sum, the challenges smallholders face in attaining food security and livelihood diversification may not be uncommon. Yet, taking the local contextual approach to determining the highest ranking challenges to achieving this, including the role and access to informal and formal markets by smallholders (which is itself a key activity of ensuring food security in rural populations) will help determine the role (as well as inherent policies and programs) that the GoK and other non-governmental institutions play.

A secondary aspect of this research was to analyze the perceptions of smallholders from another actor along the agriculture value chain. Here, four supermarket businessmen were interviewed and questioned in regards to the role of smallholders in their supermarkets. Recognizing that these businessmen were being interviewed on their thoughts on smallholders, all four businessmen noted an average of 50 percent of their stores' FFV was sourced from smallholders. As such, the businessmen appeared to be enthusiastic about engagement with the smallholders as they noted that supermarkets should (and could) play a more active role in encouraging smallholders to participate. Reasons to do so include a more attractive business model to consumers, as the supermarkets are "taking care of their own." However, even though this stance appears enthusiastic, these four businessmen (noting that the sample size is small) still commented on the relatively limited amounts of FFV a smallholder can produce and if this cannot be produced, the supermarkets are forced to look for other

sources. Hence, although supermarket personnel seem to be inviting to smallholders, their actual practices somewhat negate this opinion.

5.1.2 The future agenda and contribution to literature

Food security continues to be an important goal, as it is recognized globally by the developed world as a necessary target for development (e.g. MDGs, post-2015, development agency strategies, etc.). Today it is also common for scholars and the development agenda more broadly to recognize the importance of local contexts when determining certain programs or policies to be implemented. Nationwide programs are no longer sufficient and often leave the most vulnerable behind, by neglecting to meet their specific needs. Furthermore, in Kenya, much of the local context analysis is done in Nairobi or the close rural communities surrounding it.

This research contributes to the current literature by addressing all three of the trends identified above. First, food security is noticeably an important attribute to development and should continue to remain in development agendas moving forward. This case study analysis aimed to discover the challenges smallholders face in attaining this goal, primarily through their involvement in formal and informal markets. Second, this case study analysis adds to the need and ongoing support for local-context research by providing an analysis outside of Nairobi and its outskirts, in four rural communities in Rift Valley.

Beyond recognizing the larger scale trends, the research identifies the possible inaccuracy of labeling a specific region as food secure. Rift Valley is identified by Kenya as one of the more food secure provinces, attributed to factors such as a favorable climate, abundant arable land and high agricultural potential (Kenya Food Security Steering Group, 2012). However, this case study concludes that these populations are in

fact largely food insecure since they are unable to produce food sufficient to meet their own consumption needs and even with access to off-farm income are challenged to meet their consumption needs through markets. As such, the GoK, institutions and other governments need to be careful in distinguishing food secure populations from those that are food insecure as arable land and assumed high agricultural production rates are not sufficient to conclude if a community or individual is food secure.

The documentation of smallholders' perceptions about the role of markets in attaining food and livelihood security is another important contribution to literature from this research. The importance of markets to attaining food and livelihood security is a common theme throughout literature (Veltmeyer, 2009). Capitalist development and the attainment of food security can only be achieved when smallholders have the opportunity to participate in a modern industrial capitalist society (Veltmeyer, 2009). Yet, this research demonstrates that market involvement or involvement in the modern industrial capitalist society, although something aspired to by smallholders, does not appear to be increasing food or livelihood security. The data demonstrates that the total income derived from agriculture is approximately 20% of the annual income. The smallholders in the case study are clearly active in other non-farm and off-farm activities to attain the remaining 80% of the income. Consequently, markets, here, are not reaching the desired results of food and livelihood security. Small-scale farmers are disadvantaged to participate in these markets as they often have a relative lack of assets and unfavorable conditions when trying to enter markets (Veltmeyer, 2009).

In sum, this case study analysis both solidifies and questions the current literature on food and livelihood security, adding support and challenges to current literature. It

can be agreed that food security and local-context specific research should remain a priority moving forward. However, the role of markets in attaining this food security, as well as the indicators or factors that determine if a community or livelihood is 'food secure' challenges the current consensus in literature.

5.2 Policy considerations

Although an analysis of the livelihoods, opportunities and constraints in the area of Eldoret and Kitale is imperative, it is equally important to extrapolate these results into sufficient, local and context-specific policies, strategies or initiatives that could plausibly be addressed by the GoK or other non-governmental institutions. Based on this analysis, increasing the capacity of smallholders on their knowledge of livelihood diversification is highlighted as the most significant. Beyond recognizing the need for certain policies to be implemented, it is also critical to consider the populations, even within smaller rural communities such as the case studies analyzed, that may be left behind. A final aspect of this analysis is to evaluate the strengths of Kenya's development agenda and the weaknesses as an appropriate tool or case study for other developing countries in identifying the lessons learned and successful ways forward.

5.2.1 The implementation of a livelihood diversification policy program or initiative

The need for capacity building of smallholders on livelihood diversification is an initiative that should be considered when developing policies for smallholders in rural areas, as can be concluded from this case study analysis. Currently, around 70 percent of Kenya's rural population is directly engaged in agriculture as the largest economic activity for their families, with food often accounting for around 70 percent of household budgets (Agricultural Partnerships, 2014; IFAD, 2014).

Notably, there are many positive effects of diversification which include offsetting agriculture's seasonality (less peaks and troughs with labor utilization on the farm), asset improvement (the ability to put assets to productive use), access to cash and potentially higher income, risk reduction, and environmental benefits (the ability to generate resources that improve the quality of the natural resource base or provide options that make the time exploiting natural resources less enticing) (Ellis, 1998). Although there are positive effects of livelihood diversification, there are also negative effects including income distribution (the widening of disparities), farm output (there can be stagnation from the home farm) and adverse gender effects (men may have the ability to take on diversification opportunities, whereas women are relegated to their inherent domestic duties) (Ellis, 1998). Hence, as noted previously, the distinction between reactive versus proactive diversification is not explicitly seen here. Many of the respondents appear to be in a reactive (coping) rather than strategic, proactive diversification mode. Still, the appropriate livelihood strategies for each community are not static and rather are dependent on different types of smallholders and the economies in which they operate (Fan et al., 2013). Again, this clearly demonstrates the importance of local context specific policies to promote livelihood diversification.

The GoK has recognized the importance of an increased dependence of its populations on the agriculture sector and has outlined one of its objectives is to increase livelihood diversification. For example, in 2006 the GoK stated that "…an appropriate policy directed at diversifying the national economy for its production and exports has been the core of the Government's Economic Recovery Strategy and is the main underlying rationale for Vision 2030" (Economic Diversification, 2010: 31). However,

again it is clearly the case the GoK is taking on national initiatives as opposed to aiming their strategies to create opportunities for those in the agricultural sector to diversify into other economic activities. In order to determine a livelihood strategy, certain questions arise such as what is needed at the household level (both in terms of food as well as income) and what is the role of the household in the agricultural sector (how can a household increase gains and reduce the risks if they choose to stay predominantly in the agricultural sector) (Lundy et al., 2013; Fan et al., 2013). Significantly, many of the smallholders interviewed stated that given other opportunities (of equal income) that they would continue to farm as they are confident with their skill set in this sector. This presents one significant program the GoK and other donors should recognize, the need for strategically diversifying livelihoods in the agri-food sector as this is where the interests of smallholders lie, as well as those of the GoK, since agriculture is the largest contributor to its GDP.

To date, many of the livelihood diversification strategies or policies in Kenya have been reactive as opposed to proactive or strategic. In order to be effective and to help to secure livelihood security (as well as food security), proactive livelihood diversification models should be established. Importantly, agriculture alone cannot solely relieve food insecurity and rural poverty (Veltmeyer, 2009). However, agriculture is still an important tool and contributor to the family and the overall GDP of Kenya. Thus, strategic livelihood diversification in agriculture is the need to make markets work better in the production of traditional staples (Minten et al., 2009). This may be done through the integration of higher value crops to smallholders' systems or the integration of smallholders into higher value agri-food chains (Veltmeyer, 2009). The integration of

other cash crops and an increased intensification of inputs can be effective in strengthening and contributing to livelihood diversification in agriculture (Gray and Dowd-Uribe, 2013). A second strategic, reasonable (e.g. cost effective) strategy for institutions or the GoK to establish is to improve farmer knowledge and their management of resources beyond traditional staple crops (Gray and Dowd-Uribe, 2013). This knowledge, currently not advocated by the GoK in favor of SAP policies and cheap, urban food (often from large-scale farmers), would better educate households and could allow the household to be better aware of business opportunities (e.g. markets) (Minten et al., 2009).

Beyond strategic agriculture livelihood diversification, there is also a need for smallholders diversifying into other economic activities. In this sense, in order for the GoK to adequately advocate for livelihood diversification there are policy priorities that need to be established within a particular region. The three priority areas in Rift Valley include human capital, infrastructure and credit (Ellis, 1998). In the rural communities around Eldoret (as in any other region), there needs to be emphasis placed on education (Yang et al., 2013). As noted previously, this can be increasing knowledge on farming and diversifying through different crops (e.g. more diversified FFV) or the like in order to reduce the risks of smallholders, but also trainings and the teaching of other skill sets in order to promote strengths and comparative advantages of these smallholders in other activities. Second, the role of infrastructure is a significant barrier to smallholders in Eldoret. The lack of roads (as well as access to relevant types of transportation) increases the difficulty of smallholders to not only participate in formal markets but also for their families to commute to larger cities to participate in other types of work. Furthermore,

increasing the amount of infrastructure can cause a spillover effect by providing employment to smallholders for building the infrastructure itself. Third, the lack of credit availability in rural communities is noteworthy. In Waitaluk specifically, there was no mention of credit facilities or banks that smallholders could participate in. To reduce risks and simultaneously create incentives for smallholders to participate in other economic activities, the availability of low risk financing is seen as a necessary condition.

It can be argued, and it is sufficient to conclude, that there are various types of strategies and implementation mechanisms that can be used to assist smallholders in different rural communities both in terms of agricultural as well as in other economic activities. This should be dependent on local contexts that result in the need to promote context-specific and farm-size policies (Fan et al., 2013). In rural areas surrounding Eldoret, strategic livelihood diversification needs to be established in agriculture as well as increasing the capacity of smallholders to participate in other off-farm and non-farm activities to increase the likelihood of being food and livelihood secure. .

5.2 Who is being left behind?

There are policies in place in Kenya (on a national scale) that demonstrate the priorities of the GoK and its international donors to assist smallholders. This study showed that even in a supposedly well-supported, high agricultural potential part of the country large proportions of the rural population do not feel the effects of the programs or initiatives and are consequently left behind. This failure leads to increasing disparities.

Generally speaking, it is often the case that women and children do not participate as significantly in these types of programs or initiatives. To counteract this, many donor agencies have recognized the need to have women-specific strategies (OECD, 2009). One aspect to increasing the positive effects of women on different strategies is to focus

on the economic empowerment of women. Some scholars accredit the lack of women participating in organizations or within other strategies as a conflict between the efforts of women attempting to increase their productivity and overall levels of production in the agriculture sector, while simultaneously being responsible for other household or domestic activities including water collection, cooking and taking care of children (Quisumbing et al., 2014). By increasing the responsibilities of women in the agricultural sector, and neglecting to account for their other responsibilities, their empowerment can actually decrease as their stress levels and workloads increase (Quisumbing et al., 2014). Thus, women may become disengaged from community organizations, trainings and other types of participation due to their ongoing duties.

It is undeniable that in many cases, including Eldoret, some elements of the population will be left behind. It is important to recognize that this is the case, and to recommend, whether it is the GoK or donor organizations, to effectively engage the most vulnerable populations within rural communities to increase food and livelihood security of these populations. These groups are already faced with widening disparities and by continuing to neglect them in trainings or services, the disparity will continue to increase causing further tension and potential conflict within the community.

5.3 What can other countries learn from Kenya's experiences?

As Kenya, like every other developing country, has attempted to implement some strategies, with some success but also some failure, there are some lessons learned that can be of use for other countries benefit, but also for the further advancement of policies within Kenya itself.

Importantly, the projects in Kenya that are in place to promote livelihood diversification tend to correlate with projects that are working in vulnerable regions. As

noted at the beginning of this analysis, Rift Valley is not seen as a vulnerable area of concern for the GoK as food security levels are reported as positive, and the land highly productive. Unfortunately, as this analysis indicates, there are needs and vulnerable populations in Rift Valley that may be overlooked. The four communities surrounding Eldoret for this research (Matisi, Moi's Bridge, Sirende and Waitaluk) are prioritized for their commercialization to Eldoret and Kitale markets and the business opportunities found there. There is minimal focus on strategic agricultural diversification opportunities in terms of higher intensification of inputs and an introduction of other cash crops.

In order to achieve these ends, it is most noticeable that the GoK operates at a national level (EPA, 2014; Fan et al., 2013). However, looking at local or more regional approaches is imperative for three main reasons. First, a lot of the impacts (be it climate change, or infrastructure, or availability of markets) are manifested locally (Fan et al., 2013). For example, climate change is often understood as an increase in global temperatures; however there are changes in regional climate patterns (such as drought in the area of Eldoret and Kitale versus floods in other regions) that affect those local livelihoods (OECD, 2009). Second, the vulnerability and different adaptive capacities to a particular issue are again often realized at a local level (Fan et al., 2013). For example, in terms of the accessibility of markets in Eldoret or Kitale, the vulnerabilities of the smallholders are very context-specific based on the different socio- ecological factors, health status and infrastructures (OECD, 2009). As a result of these context specific variables, decisions and steps forward should be based on the outcomes of these interactions at a local level. Third, it is often the case that certain initiatives are best observed at local levels (Fan et al., 2013). Different strategies often translate into the

knowledge and capacity of smallholders into certain behaviors and activities. The ability of smallholders to make decisions for their households (be it drought tolerant seeds, investing in irrigation measures, diversifying their livelihoods, etc.) represents real life implementation of certain strategies or initiatives (OECD, 2009).

To be an effective policy, initiative or strategy, implemented in any developing country including Kenya, there needs to be recognition that there is a difference for making certain decisions at the local level (having households choose the strategies they wish to implement) as opposed to having decisions or initiatives determined by those in higher levels, often national governments. In order for the decisions to be implemented at the local level, which is described as the most effective and long-term strategy for development, it is ideal to consult with the local actors who are being affected. To achieve this end, there needs to be effective communication channels, and institutions that continually support innovation as well as participation (by all actors in a given community) from different regions. Notably, there are strengths as well as limitations to this approach. In rural areas many of the strengths are found within the strong social networks and high rates of volunteerism (OECD, 2009). Yet, there are also limitations such as the lack of economic resources and isolation from services (OECD, 2009). These limitations are dependent on the coordination between the government and donor organizations to provide the necessary resources to overcome these barriers, currently one of Kenya's development strengths.

In sum, there are numerous considerations that Kenya could and should refer to. The priority of the Eldoret and Kitale region of Kenya should be to increase and diversify the agricultural livelihoods of smallholders as well as to promote smallholders'

engagement in strategic economic activities wherein they have a comparative advantage. In doing so, it is important to remember to purposefully include the most marginalized and vulnerable populations to successfully attain food and livelihood security in communities and households. Kenya needs to emerge as a leader in SSA and demonstrate the importance of strategic and proactive livelihood diversification strategies in order to become a food and livelihood secure country. To achieve this, emphasis must continue to be placed on the role of local or regional contexts to create the most effective and successful development agenda in attaining food and livelihood security.

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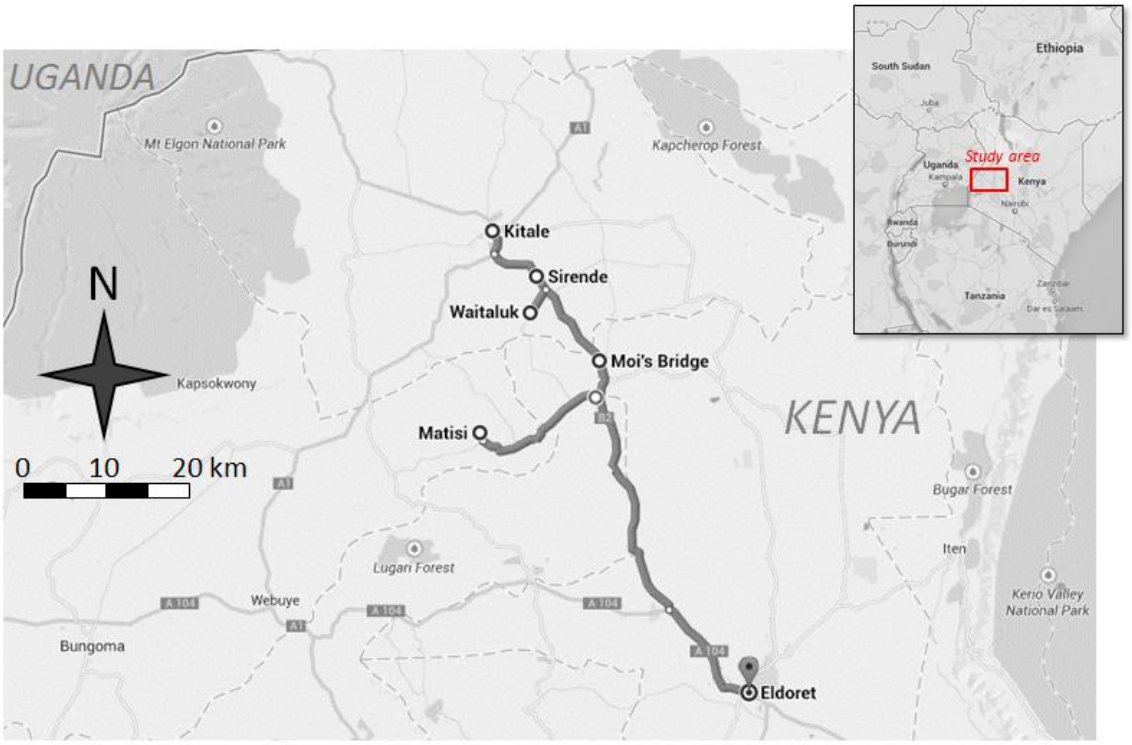
Annex A: Map of Case Study Area



Annex B: Smallholder Interview Question Guide

Preliminary Questions

Is this farmer currently producing fresh fruits and/or vegetables (FFV) **Y/N**
(Please note, if the answer is no, then the farmer can no longer participate in the interview)?

As this farmer is producing FFV, what is the approximate distance from Eldoret to the farm (in kilometres)?

Personal Identification Information

Name:

Age:

Location:

Family Size:

Preliminary Farming Information

How many acres do you currently farm?

- Do you own the land? **Y/N**
    - If so, how long have you owned the land?
    - If so, have you acquired more land over the years you have worked on the farm? **Y/N**
- Do you lease the land? **Y/N** (If not, write no and then move on to the next question)
    - If so, from who?
    - If so, how long have you leased the land?
    - If so, what are the current fees associated with leasing the land?

What type(s) of crops do you produce?

If 1 crop (name the crop). If 2 crops, ask the same questions being sure to include individual numbers (for yield and income of each individual crop) as well as totals. Follow the same protocol for 3+ crops as well.

Yield

- What was your yield last year?
- What is your projected yield for this year?
- What is your average yield over the past 5 years?
- Were there any significant events that altered your yield within the past decade? (examples may include weather systems, laws, family situations, etc.) **Y/N**
    - If there is a significant event, please have them explain it: [Was the event foreseeable? Could it have been prevented? How did it affect yields- an estimation? How long did the event last? Have any preventive precautions been taken to prevent the event from existing in the future?]

<u>Expenses/Income</u>

- What was your income last year from farming?
- What percentage (approximately) of the income from farming makes your annual income?
- What expenses do you acquire based strictly from farming?
    - Do you have hired labor on your farm? **Y/N**
        - If so, how much do you pay your staff?
        - If so, how many people do you currently have on staff?
        - If not, do you wish you had hired staff?
            - If so, what are the current restrictions to employing staff?
    - Do you use machinery on your farm? **Y/N**
        - If so, do you own the machinery? **Y/N**
            - If so, is the machinery paid off? **Y/N**
            - If not, what are your current payments?
                - How often are you required to submit payments?

        - How long will it take you to fully own the machinery?

    - If so, what are the average monthly costs of gasoline or diesel to operate the machinery?

- If not, what are the reasons for not having operating machinery on your land. Please have the interviewee elaborate as much as possible the different reasons.

- Do you use fertilizers on your farm? **Y/N**

    - If so, what is the brand of fertilizer you use?

    - If so, what quantity of fertilizer do you use per season?

    - If so, how much does the fertilizer cost you per growing season?

    - If so, how long have you been using fertilizer on your land?

    - If not, what are the reasons for not using fertilizer on your land? Please have the interviewee explain in detail the different reasons they are not using fertilizer on their land.

Do you take an active role in participating in your farming community? **Y/N** (Depending on the answer, you can answer the "if so" questions, or skip to the "if not" questions)

- If so:
    - What organization do you participate with?

    - What are the goals of the organization?

    - How many people work with you?

    - How often do you meet with other members?

    - Where do you meet other members?

        - Is travel involved? **Y/N**
        - How long does it take you to travel to a meeting?
    - What is your role in the group?
    - Are you aware of how is the organization funded? **Y/N** (If so, please elaborate on your knowledge)
        - Is there Kenyan government intervention with the organization? **Y/N** (If so, please elaborate on your knowledge)
        - Is there outside aid support from international non-governmental organizations or more local organizations? **Y/N** (If so, please elaborate on your knowledge)
    - When was the group established?
    - Who established the group?
    - How long have you participated in the group or organization?
    - What benefits do you gain from participating with this particular organization?

- If not:
    - Are there organizations or groups available? **Y/N** (If so, please elaborate on your knowledge)
        - If so:
            - Do you wish to be a part of the/an organization? **Y/N**
            - What factors did you consider to not be involved with the group? Please describe all factors.
        - If not:
            - What do you think are the reasons for a lack of organization in your community? Please have the interviewee describe what he/she means in all of the reasons.

<u>Formal and Informal Markets</u>
<u>IF THE SMALLHOLDERS PARTICIPATES IN BOTH FORMAL AND INFORMAL MARKETS, SKIP TO PAGE</u>

<u>Informal Markets</u>

Please describe what you (the interviewee) constitute as an informal market.

Do you participate in an informal market? **Y/N** (If the answer is yes, answer the "if so" questions; if the answer is no, skip to the "if not" section).

- If so:
    - What does participating in the informal market mean to you?
    - When did you enter the market?
    - How did you enter the given market?
    - What are your current average monthly profits from participating in the market?
    - Do you work with anyone else directly in the informal market? If so, please have the interviewee explain the different roles of the different people he or she works with. For example, whether or not they work with another farmer at a kiosk or supplier, etc.
    - Describe your current thoughts about participating in the market.
    - Have you ever thought about leaving the informal market? **Y/N**
        - If so:
            - What were the reasons for considering leaving?
            - Why did you end up staying?
    - Please describe any challenges you have faced during either the process of entering the informal market or being in it.
    - What is the approximate total percent of produce that you sell in the given market out of your total yield?
        - If the approximate is less than 100%, where is the rest of the yield sold or allocated?
    - What are your current monthly costs for operating in the informal market?
    - What are your current monthly revenues for operating in the informal market?
    - What do you see as the advantages of working in an informal market?
    - What do you see as the disadvantages of working in an informal market?

- Please describe what you think the future of being involved in informal markets means for your farming business.

- If not:
  - Have you ever participated in an informal market? **Y/N** (If smallholder answers yes, go to "if so" and if they answer no, go the "if not" section)
    - If so:
      - When did you participate in the market?
      - When did you stop participating in the market?
      - What were you reasons for no longer participating? Please describe your reasons.
    - If not:
      - What are your current reasons for not entering into the informal market?
      - Are there other reasons that have affected your decision previously? If so, please explain them in detail.
      - Do you wish to be participating in an informal market? **Y/N** (If smallholder answers yes, go to "if so" and if they answer no, go the "if not" section)
        - If so:
          - Have you tried to enter the informal market before? **Y/N**

            If so, when did you attempt to enter the market?
          - What are the challenges preventing you from entering an informal market?
          - Are there current opportunities to join the informal market? **Y/N**
        - If not:
          - Please name and describe the reasons for not wanting to participate in the informal market.
  - What are your thoughts regarding the informal market?

- What are the advantages of participating in the informal market?
- What are the disadvantages of working in the informal market?
- Please describe what participating (in the future) in the informal markets means for your farming business.

Formal Markets

Please describe what a formal market means to you.

Do you participate in formal markets? **Y/N** (If smallholder answers yes, go to "if so" and if they answer no, go the "if not" section)

- If so:
  - What does participating in the formal market mean to you?
  - When did you enter the market?
  - How did you enter the given market?
  - What are your current average monthly profits from participating in the market?
  - Do you work with anyone else directly in the formal market? If so, please have the interviewee explain the different roles of the different people he or she works with. For example, whether or not they work with another farmer at a kiosk or supplier, etc.
  - Describe your current thoughts about participating in the market.
  - Have you ever thought about leaving the formal market? **Y/N**
    - If so:
      - What were the reasons for considering leaving?
      - Why did you end up staying?
  - Please describe any challenges you have faced during either the process of entering the formal market or being in it.
  - What is the approximate total percent of produce that you sell in the given market out of your total yield?
    - If the approximate is less than 100%, where is the rest of the yield sold or allocated?

- What are your current monthly costs for operating in the formal market?
- What are your current monthly revenues for operating in the formal market?
- What do you see as the advantages of working in a formal market?
- What do you see as the disadvantages of working in a formal market?
- Please describe what you think the future of being involved in formal markets means for your farming business.

- If not:
  - Have you ever participated in a formal market? **Y/N** (If smallholder answers yes, go to "if so" and if they answer no, go the "if not" section)
    - If so:
      - When did you participate in the market?
      - When did you stop participating in the market?
      - What were you reasons for no longer participating? Please describe your reasons.
    - If not:
      - What are your current reasons for not entering into the formal market?
      - Are there other reasons that have affected your decision previously? If so, please explain them in detail.
      - Do you wish to be participating in a formal market? **Y/N** (If smallholder answers yes, go to "if so" and if they answer no, go the "if not" section)
        - If so:
          - Have you tried to enter the formal market before? If so, when did you attempt to enter the market?
          - What are the challenges preventing you from entering a formal market?
          - Are there current opportunities to join the formal market?

- If not:
    - Please name and describe the reasons for not wanting to participate in the formal market.

- What are your thoughts regarding the formal market?

- What are the advantages of participating in the formal market?

- What are the disadvantages of working in the formal market?

- Please describe what participating (in the future) in the formal markets means for your farming business.

Both Markets

Do you participate in both the informal as well as the formal markets? **Y/N**

- What are the advantages of working in both markets?

- What are the disadvantages of working in both markets?

- For you, which market has been more profitable? (formal or informal)?
    - If it was possible to earn the same profits from participating in one market as opposed to two separate markets; which market which you choose to be in? Why?

    - Are there other concerns, aside from profits, that determine if you participate in both markets or one or the other? If so, please explain them in detail.

What is the role of the Government in Kenya (if anything) in promoting smallholders to participate in markets?

- In your opinion, should the Government of Kenya be concerned with, or assisting smallholders in gaining access to markets? **Y/N** (If smallholder answers yes, go to "if so" and if they answer no, go the "if not" section)

    - If so:
        - What policies or implementation techniques would you like to see implemented?

        - To your knowledge, are these policies currently implemented? **Y/N**

    - If not:
        - Please explain why you do not think the Government of Kenya should be helping smallholders enter markets.

        - In your opinion, is it anyone's responsibility (other than that of the smallholders') for assistance in entering markets? Please explain.

- To your knowledge, does the Government of Kenya promote smallholders entering formal markets? Informal markets?

- To your knowledge, does the Government of Kenya help smallholders gain access to markets? If so, how?

- To your knowledge, has the Government of Kenya changed anything over the last 5 years to help smallholders (Examples may be increasing funds, fertilizer subsidies, etc)? If so, please explain the changes. The last 10 years?

- To your knowledge, has the Government of Kenya created a new policy or promised some form of aid to smallholders to be implemented within the next 5 years? If so, please explain what you know about these policies.

- In your opinion, do you think the Government of Kenya is helping smallholders enough? **Y/N**

    - If so, please thoroughly explain what the Government of Kenya is doing.

    - If not, please thoroughly explain what the Government of Kenya, in your opinion, should be doing to further assist smallholders.

What is the role of international organizations (if anything) in promoting smallholders to participate in markets?

- In your opinion, should international organizations be concerned with, or assisting smallholders in gaining access to markets? **Y/N** (If smallholder answers yes, go to "if so" and if they answer no, go the "if not" section)

    - If so:
        - What policies or implementation techniques would you like to see implemented?

        - To your knowledge, are these policies currently implemented?

    - If not:
        - Please explain why you do not think international organizations should be helping smallholders enter markets.

        - In your opinion, is it anyone's responsibility (other than that of the smallholders') for assistance in entering markets?

- To your knowledge, do international organizations promote smallholders entering formal markets? Informal markets?

- To your knowledge, what international organizations (if any) currently work in your community?

- To your knowledge, do international organizations help smallholders gain access to markets? If so, how?

- To your knowledge, have international organizations changed anything over the last 5 years to help smallholders (Examples may be increasing funds, existence of new organizations, etc)? If so, please explain the changes. The last 10 years?

- To your knowledge, have international organizations imposed new promises to some form of aid to smallholders to be implemented within the next 5 years? If so, please explain what you know about these policies.

- In your opinion, do you think the role of international organizations in assisting smallholders enough? **Y/N** (If smallholder answers yes, go to "if so" and if they answer no, go the "if not" section)

    - If so, please thoroughly explain what international organizations are currently doing.

    - If not, please thoroughly explain what international organizations, in your opinion, should be doing to further assist smallholders.

Supplementary Questions

- To your knowledge, are there any other local organizations, families, co-operatives, etc. that are currently assisting smallholders? **Y/N** (If smallholder answers yes, go to "if so" and if they answer no, go the "if not" section)

    - If so:
        - Who or what are these organizations helping smallholders?

    - If not:
        - Are there any organizations that currently exist that may be beneficial to this cause and are not assisting smallholders for a variety of reasons? If so, please explain.

- Do you or have you ever personally seek/seeked any assistance from any government agency or organization in gaining access to markets? **Y/N, if yes:**

    - If you have received assistance:
        - Who or what was it from?

        - What did the assistance provide?

        - Did you receive the assistance more than once? If so, how often? Are you still receiving the assistance?

Future of Farming

What do you see as the foreseeable future of your farm?
(One line response per question is sufficient)

- In terms of:
    - Participating in markets?
        - Next year?
        - 5 years?
        - 10 years?
    - Gaining access to markets?
        - Next year?
        - 5 years?
        - 10 years?
    - Seeking assistance?
        - Next year?
        - 5 years?
        - 10 years?
    - Government involvement with your farm?
        - Next year?
        - 5 years?
        - 10 years?
    - International organizations assistance with your farm?
        - Next year?
        - 5 years?
        - 10 years?

Please describe, in detail, policy implications (from any source, e.g. Government of Kenya, non-governmental organizations, etc) that you would change if you were able to do so.

Please describe, in detail, new policies you would recommend or enact if you had the power to do so.

If you had the ability to change one aspect of smallholders and their relationship with markets (both formal and informal) what would it be? Why? What would this one thing do?

If other income options were readily available, would you consider other career choices or continue in the farming industry? Why?

What is the role of infrastructure in your community?

- *Do you have roads?*
- *Hydro?*
- *Ways of getting to major/large cities?*
- *Places to store your produce?- If so, are they community based or do you privately own it/them?*
- *What else would you like to see to make transporting your produce easier?*

Concluding Remarks

If you have any other comments, discussion points or thoughts that were not discussed in the questionnaire, please outline them now.

Thank you for your time and commitment to assisting me with my research

Annex C: Supermarket/Businessman Interview Question Guide

Personal Information

Name:

Age:

Occupation:
How long have you held this occupation?

Work at which supermarket:

Please provide the address:

How long have you worked at this supermarket?

Have you held other positions at this supermarket?

Have you worked at other supermarkets? **Y/N**
If so, which one(s)?

Supermarket and Smallholder Information

How much (in terms of weight) fresh fruit and vegetable (FFV) produce do you have in stock on a daily basis?

What percent of your store is occupied with FFV?

When do you receive your FFV (for example, every morning, weekly)?

Do you ever dispose of FFV? **Y/N**

If so, how much?

If so, when?

If so, why?

How much FFV do you receive from smallholders (in percent)?

How much FFV do you receive from large holders (in percent)?

How do smallholders bring their FFV to your store?

Do you use middlemen to transport food? **Y/N**

Do you have contracts with smallholders? **Y/N**

If so, is it a legally binding contract? **Y/N**

If so, what are the terms of the contract? Please describe all terms.

If so, what happens if a smallholder does not meet the terms?

If not, how do you ensure smallholders will provide produce?

How are smallholders paid for their produce?

Is payment for produce instantaneous?

What form of payment is given to smallholders (for example, do you pay them in cash or credit, etc.)?

Do you think smallholders should participate in formal markets? **Y/N**

Please describe what you think the role of smallholders is in formal markets.

Please describe what you think the role of smallholders in informal markets is.

Does your company promote smallholders access to formal markets? **Y/N**

If so, how? What do you provide smallholders with?

If not, why not? Please describe your reasons.

Do you think there should be more smallholder FFV in formal markets? **Y/N**

If so, why?

If not, why not?

Do you think other corporations should promote smallholders accessing formal markets?

If so, in what ways? How?

If not, why not?

What do you think the future of smallholders is in formal businesses?

Are there any other comments, questions or concerns you have that were not previously discussed. Please write them here.