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TEGEMEO INSTITUTE OF AGRICULTURAL POLICY AND DEVELOPMENT

IMPROVING PARTICIPATION IN AGRICULTURAL COMMODITY MARKETS FOR SMALLHOLDER AVOCADO FARMERS IN KENYA: ASSESSING GROWTH OPPORTUNITIES FOR WOMEN IN KANDARA AND MARANI DISTRICTS

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Executive summary

Well-functioning factor and product markets can provide the poor, particularly smallholder farmers and the landless, with avenues for wealth creation, thereby expediting poverty and food insecurity alleviation. Yet in developing countries, particularly in sub-Saharan Africa, markets for agricultural inputs and outputs are in most cases missing or disorganised at best. The intensity of marginalisation is more pronounced among smallholder women farmers, because they face higher entry barriers than men in modern value chains. For instance, women have the least access to and control of productive resources such as land, capital and agricultural services like credit and training that are necessary for increasing yields and moving from subsistence to market oriented production. Yet, there is paucity of information on the type of interventions that work best to fully integrate women into markets for high value commodities such as fruit tree value chains with and without commercial orientation. The current trend showing that men are increasingly moving into food crops as well as into the previously neglected fruit trees as the prices of export crops fall suggests that there is immediate need for an intervention to improve women's access to lucrative markets. While a few studies have explored the possibility of using collective action to integrate smallholder farmers and women into agricultural commodity markets, there is a dearth of empirical backing on how collective action improves women's access to markets for export crops such as avocado, which are exclusively male dominated, without creating imbalance in power relations within a household. Thus, it appears that integrating women into agricultural commodity markets requires a holistic approach that involves a critical understanding of the value chain, with a view to identifying bottlenecks and opportunities for women to participate in the production and marketing of agricultural commodities.

This study was an attempt to bridge the aforementioned gap and come up with interventions that are tailored to the needs of smallholder women farmers, with a view to improving their access to and participation in markets for high value agricultural products. In this study, we used the avocado value chain as a case study and focused on women as one of the marginalised groups. We used data collected on avocado value chains in Kandara and Marani, which exhibit export and domestic market orientations, respectively to (i) establish the level of participation of women in the two value chains; (ii) identify constraints to and opportunities for women's participation in the value chains; (iii) examine the role of collective action in enhancing participation by women in the stages of the value chains; and, (iv) identify prospects for growth at the stages of the value chain, such as institutional, technological, financial and market innovations that can be harnessed to improve women's participation.

We used a value chain approach and employed mixed methods of data collection such as household surveys consisting of 100 farmers from each of the two study sites, focus group discussion with producers, in-depth case studies of two farmer groups in Kandara and key

informant interviews with other chain actors like nursery operators, traders, processors and exporters. The sampled producers from Kandara consisted of 65 households from avocado groups and 35 from outside groups.

The results indicate that avocado enterprise is an important source of income to the sampled households, accounting for 12 percent and 6 percent of the total income and 23 percent and 11 percent of crop income in Kandara and Marani, respectively. In Marani, avocado enterprise seems to be less important to both men and women because the market for the produce is less developed and both men and women tend to prefer food crops such as maize and beans for food security and cash crops like coffee for income.

The findings show that the export avocado value chain in Kandara is well developed and elaborate and consists of many actors including nursery operators, farmers, traders, brokers, processors and exporters. On the other hand, the chain for the locally marketed avocado such as the one in Marani is relatively short and includes nursery operators, farmers, brokers and traders. Brokers and exporters are the main players in the avocado value chain in Kandara while retailers and consumers constitute the main buyers in the local avocado value chain in Marani. Nevertheless, the majority of the producers in Kandara, particularly women prefer to sell to brokers despite the low prices offered and the low gross margins derived from this channel. Brokers are preferred to exporters because they provide instant payments and meet the cost of picking, grading and transporting fruits from the farm gate, which are the major constraints that limit the participation of women in female headed households in the export end of the chain. In Marani, consumers are preferred because they offer better prices than other buyers and can be easily reached in the nearby markets without necessarily incurring additional costs such as transport cost. Likewise, retailers are preferred in Marani because they are always available throughout the season and they travel to the farms to collect the produce unlike large scale traders who are unreliable and only transact with the farmers when there is scarcity of fruits in other major producing regions.

In general, structures that govern the two value chains differ and they appear to be more developed in the export than in the domestic chain. Similarly, market arrangements tend to be more formalised in the elaborate and well established value chains. Likewise, formalisation of transactions tends to be common at the upper end of the chain. At the production level, a mixture of spot market and contractual arrangements is predominant, but the producers are loosely bound by a tripartite contract through officials of their groups. In the domestic market or local trading in both Kandara and Marani, spot market transactions are the norm rather than the exception and non-formal arrangements based on trust that has developed through repeated transactions and long standing relationships substitute formal contracts. However, stringent quality standards occasioned by an increase in the consumers' level of awareness of food safety standards in the international market, coupled with the desire by the downstream actors (exporters and

processors) to maintain customer brand loyalty in the international market necessitates the formalisation of the arrangements.

The results suggest that where the chain is well developed and returns from the enterprise are high as in Kandara, more women dominate the production stage, but men tend to own the fields, make decisions on sales of fruits of premium quality such as grade 1 and control revenues. However, joint decision making on sales of fruits of inferior quality and control of proceeds tend to be more prevalent than sole decision making by men and women in male headed households. Likewise, where the chain is well-developed, women participate in the upper end of the chain, but they tend to be confined to low paying and unskilled jobs such as grading, sorting and grafting that require keenness and patience. However, women in female headed households appear to be fully integrated in most of the stages of the export value chain because they assume the responsibility of the household head upon the death of their husbands. Consequently, integrating such women into the export end of the value chain will require alleviating constraints that limit their participation in the export end of the chain such as provision of interlinked services like spraying, harvesting, and grading coupled with prompt payment of the proceeds. On the other hand, integrating women in male headed households in the export avocado value chain will require involving them in training on certification standards. This is likely to improve the quantity and quality of fruits sold to exporters and result in a win-win situation for all the actors. To implement the aforementioned strategy, the increasing importance in joint decision making on sales and proceeds observed in male headed households in Kandara can be exploited.

In Marani, where the value chain is less elaborate and the demand for avocado is low, women appear to be fully integrated in all the stages of the value chain because the avocado produced is of low commercial value. Nevertheless, replacing the local variety with the improved ones appears to be the only feasible option to improve the value of the crop. Yet, this strategy is likely to alter the position of women as men are likely to take over most of the functions as the value chain becomes more commercialised, because they have control over the resources necessary for production. Because women in Marani have competitive advantage since they have the knowledge and experience in avocado production, institutions promoting the new variety can tap into the existing strength to ensure that women are not displaced from the chain. Such activities can be embedded in the already existing agricultural and non-agricultural groups where women dominate.

The innovations associated with collective action such as contract farming, traceability certificates, writing of grant proposals and the formation of saving schemes notwithstanding, it appears that women's participation in the produce marketing groups is a necessary but not a sufficient condition for gaining access to lucrative markets such as the export markets. Instead, prompt payment and the provision of business services, such as spraying, harvesting and grading, which are necessary for production of quality fruits that meet buyer specifications, are paramount in alleviating constraints that predispose women to exploitation by brokers. Likewise, contractual arrangements are likely to help structure markets and provide producers with market options that

offer better prices, but the arrangements need to be accompanied by clear terms and conditions, which should be known to buyers and sellers. For instance, issues regarding grading and pricing as well as mechanisms governing terms of the contract need to be clearly defined in the contract and understood by buyers and sellers.

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Table of Contents

List of Tables

List of Figures

Acronyms

AGAK	Avocado Growers Association of Kenya
agGDP	Agricultural Gross Domestic Product
BDS	Business Development Services
EAG	East African Growers
EU	European Union
FAO	Food and Agriculture Organisation of the United Nations
FGDs	Focus Group Discussions
FPEAK	Fresh Produce Exporters Association of Kenya
GDP	Gross Domestic Product
HCDA	Horticultural Crops Development Authority
ILO	International Labour Organisation
KARI	Kenya Agricultural Research Institute
KBDS	Kenya Business Development Services
KHDP	Kenya Horticultural Development Program
KHE	Kenya Horticultural Exporters
MoA	Ministry of Agriculture
PSDA	Promotion of Private Sector Development in Agriculture
SWOT	Strengths, Weaknesses, Opportunities and Threats
UAE	United Arab Emirates
USAID	United States Agency for International Development

1. Introduction

There is general consensus that in sub-Saharan Africa, markets will play a pivotal role in the realization of one of the millennium development goals on eradicating extreme hunger and poverty by 2015. This is because smallholder farmers constitute the majority of the rural population where vulnerability to poverty and food insecurity is a major challenge. Well-functioning factor and product markets can provide the poor, particularly smallholder farmers and the landless, with avenues for wealth creation, thereby expediting poverty and food insecurity alleviation. Alternatively, when markets function well, trade thrives and farmers are able to recoup returns on investment outlays, thus providing an incentive for reinvestment in agriculture (Jayne et al. 2004). Yet in developing countries, particularly in sub-Saharan Africa, markets for agricultural inputs and outputs are in most cases missing or disorganised at best (Poulton et al., 2006;Ashraf et al.,2008). In such circumstances, farmers often produce the wrong mix of crops, often using inefficient technologies and consumers fail to receive goods at the right time in the right form and in the right place even if they are willing to pay market prices, resulting in inefficiency.

While market failure is a major constraint to smallholder farmers, the effects are compounded for the marginalised groups such as the poor, women and households in low potential areas (Poulton et al., 2006; FAO, 2011). The challenges are more pronounced among smallholder women farmers because they face higher entry barriers than men in modern value chains. For instance, women have the least access to and control over productive resources such as land, capital and agricultural services like credit and training that are necessary for increasing yields and moving from subsistence to market oriented production (Jiggins et al., 1997; FAO, 2011). Likewise, in most sub-Saharan African countries, the distribution of physical (land, agricultural equipment, livestock) and human capital favours men and the differences in rights and responsibilities within the household bring about inefficient resource allocation and constrain women's ability to respond to price incentives (Quisumbing and Pandolfelli, 2010). Consequently, women generally produce for more localized spot markets and in small volumes than men, and when they are involved in marketing of agricultural produce, they tend to be concentrated at the lower levels of the supply or value chain, in perishable or low value products (Baden, 1998; World Bank, 2003). Besides, past studies affirm that women's engagement in agricultural production and marketing activities does not always translate into increased incomes for them or improved decision making regarding the use of the income generated from agricultural activities (FAO, 2011).Yet there is overwhelming evidence that closing the gender gap in input use would generate significant gains for the agricultural sector in particular and society in general, because women account for up to 80 percent of the food produced, stored, processed and marketed in sub-Saharan Africa (ibid, 2011). However, they constitute only 20-30% of agricultural wage workers in modern agricultural value chains yet these chains usually offer wage and self-employment with better

pay and working conditions than traditional agriculture (FAO, ILO and IUF, 2007). When women are employed in the modern value chains, they predominate in the high value industries for export or domestic supermarkets, such as fresh fruits, vegetables, flowers, poultry and seafood (World Bank, 2003). However, they tend to be employed as casual labourers to do labour intensive and manually unskilled tasks and occupy unstable and flexible jobs that lack social security and other benefits (Meartens and Swinnen, 2009). For example, in Kenya's fruit and vegetable export businesses, women constitute 80% of the workers in packing, labeling and bar-coding of produce (Dolan and Sutherland, 2002). Thus, it appears that integrating women into agricultural commodity markets requires a holistic approach that involves a critical understanding and identification of the bottlenecks to and opportunities for women to participate in the production and marketing of agricultural commodities. This therefore calls for an in-depth analysis of the value chains for key agricultural commodities that have the potential to foster women's integration into markets, with a view to identifying leverage points for intervention. Value chain analysis is critical for understanding markets, their relationships, the participation of different actors and the main constraints that limit the growth of the enterprise as well as competitiveness of smallholder farmers. Consequently, results from value chain analyses have been used in the development sector to design market oriented interventions and strategies that are beneficial to smallholder farmers in the developing countries (van den Berg et al. 2009; IFAD, 2010). Furthermore, recent trends show that value chain concepts and approaches can be used to increase understanding of how firms and producers of high value products in developing countries are integrating into regional and global markets (Choudhary et al. 2011).

However, to the extent that the constraints and opportunities faced by the marginalised groups differ, the interventions are likely to be different for the different groups of smallholder farmers. Yet, there is paucity of information on the type of interventions that work best to fully integrate women into markets for high value commodities such as fruit tree value chains with and without commercial orientation. The current trend showing that men are increasingly moving into food crops as well as into the previously neglected fruit trees as the prices of export crops fall suggests that there is immediate need for intervention to improve women's access to lucrative markets (Bolzahi, de Villard and de Pryck, 2010). While a few studies have explored the possibility of using collective action to integrate smallholder farmers and women into agricultural commodity markets (Barham and Chitemi, 2009; Gruere et al., 2009; Markelova et al., 2009; Kaganzi et al., 2009; Kruijssen et al., 2009; Pionetti et al., 2011), there is a dearth of empirical backing on how collective action links women to markets for export crops such as avocado, which are exclusively male dominated, without creating imbalance in power relations within a household.

This study is an attempt to bridge the aforementioned gaps and come up with interventions that are tailored to the needs of smallholder women farmers, with a view to improving their access to and participation in markets for high value agricultural products. The study is a follow up on an earlier phase that was conducted in Kenya by Tegemeo Institute (Egerton University) and World Agroforestry Centre (ICRAF), and in Uganda by Makerere University on "Participation in

Agricultural Commodity Markets among the Poor and Marginalised in Kenya and Uganda". The findings of the study will be useful in providing information to policy makers, researchers and development practitioners on possible investment areas and strategies for improving women's access to and participation in markets for high value agricultural products with the ultimate objective of alleviating poverty and food insecurity among the marginalised groups.

The rest of the report is organised as follows: In section two, we discuss the relevance of the study in the context of Kenya and conclude with the objectives, and research questions that guided the study. We review past studies on collective action, value chain analysis and market participation with specific reference to women smallholder farmers. Section three provides information on the sampling design and procedure as well as methods of data collection and analysis, while the results are presented in section four and discussed in section five. In section six, conclusions and recommendations arising from the study are presented.

2. Relevance to Kenya's Context

The study builds on the findings of an earlier phase, which was a Ford funded joint collaboration project conducted in Kenya by Tegemeo Institute (Egerton University) and World Agroforestry Centre (ICRAF), and Uganda by Makerere University on "Participation in agricultural commodity markets among the poor and the marginalised in Kenya and Uganda". The study entailed analysis of a three year panel dataset collected on production and marketing in 2000, 2004 and 2007 from smallholder farmers drawn from diverse agro-ecological zones in Kenya to identify promising enterprises for the marginalised groups based on the relative importance of market participation in these enterprises vis-à-vis other enterprises and the growing trends in market participation in the identified enterprises by the marginalised groups. In addition, the study looked into household level factors that promoted market access and participation by the marginalised groups such as women, the income poor and those in remote agricultural areas. Some of the salient findings of the study, which merited further research, included the finding that membership in farmer groups influenced participation in agricultural commodity markets as well as the degree of commercialization by the marginalised groups, indicating that collective action could be a viable intervention in the value chains of the marginalised groups[1]. Besides the finding that enterprises that have the potential to integrate the marginalised groups differ for the different groups prompted the quest for more information on the enterprises that have the greatest potential to incorporate women, the poor and households in remote or marginal agricultural areas into agricultural commodity markets. Thus, due to lack of detailed data on relevant variables as well as on collective action, the first phase of the study did not explore pathways through which collective action enhances participation by the marginalised groups in

[1] See Mathenge et al. 2011 for elaborate explanation of the findings

agricultural commodity markets. Furthermore, the previous analysis was confined to the household level (producers) data and little attention was paid to other actors along the selected value chains. Such studies are unlikely to unravel constraints that emanate from poor chain coordination due to lack of appropriate governance structures. Besides, designing targeted interventions for the marginalised groups necessitates identifying the weakest and the strongest points along the chain in order to strengthen participation by the marginalised groups in the selected chains. The aforementioned issues could not be studied in the first phase because of lack of data for other key actors along the value chain. In this study, we use avocado value chain as a case study and focus on women as one of the marginalised groups.

2.1. The Avocado Value Chain in Kenya: A Review of Literature

Kenyan horticultural sector includes a wide range of fruits and vegetables as well as an export-oriented flower subsector. The country's tropical and temperate climate zones favour the cultivation of a wide range of horticultural crops. In the coastal lowlands, farmers grow mangoes, citrus fruits, cashew nuts, bananas, hot pepper, brinjals and melons. Crops grown in the middle altitudes include banana, mango, avocado, pineapple, grapes, passion fruit, pawpaw, citrus, flowers, onions, garlic, tomatoes, kale, cucumbers, peppers, okra and French beans. At higher elevations, avocado, pears, apples, plums, carrots, cabbage, peas, potatoes and flowers are grown. Horticultural production in Kenya benefits from a climate that allows year-round cultivation, fertile soils and a competitive labour force (USAID, 2008).

Horticulture is the largest subsector in agriculture contributing 33% of the agricultural GDP (agGDP) and 38% of export earnings (Government of Kenya, 2010) with up to 80% of its production being undertaken by smallholder farmers (Kenya Development Learning Centre, 2010). The 2000 Rural Household Survey carried out by Tegemeo Institute and Michigan State University found that 98% of farmers in Kenya grew some fruits and vegetables and 35% of fruit and vegetable production was marketed. Overall, fruits and vegetables contributed 18% of average household income. Over 90 percent of households in all income groups grow fruits and vegetables, but richer households market a larger share of their output and account for a large proportion of total sales. Avocados are an important horticultural export crop in Kenya, comprising approximately 75% of fresh fruit exports recorded by HCDA in 2003, and 14% of all recorded horticulture exports.

The main varieties of avocado grown in Kenya are Hass (20%) and Fuerte (80%) for export market and Pueble, Duke and G6 for the domestic market (Mellado and Ferrari, 2011). About 70% of the fruit is grown in Central and Eastern regions, with Central region being the leading producer (Horticulture Crop Production Report, 2010). Avocado production is dominated by smallholders who constitute 85% of total avocado growers in the country (Wasilwa *et al*., 2007).

The domestic market is the largest source of demand for Kenyan avocados accounting for over 80% of the total production and the rest are exported as fresh fruits or processed and exported as crude oil (Mwangi, 2006). In the domestic market avocados are sold locally through market vendors, small retail outlets, supermarkets and hotels. Prior to 2004-2005 the local market involved primarily wholesale and retail fresh fruit sales. However, since then three avocado oil processors have opened businesses in Kenya and provide a growing market opportunity for Grade 2 avocados—which are not suitable for export or sale in the domestic fresh fruit market (USAID, 2008). The processors produce crude oil that is sold for further refining and processing in Europe, South Africa or the United States (USAID, 2008). In the export market, Kenyan fresh avocados are sold primarily in Europe and the Middle East, with France being the largest buyer. Other main export markets include United Arab Emirates, the Netherlands, the United Kingdom and Germany (Mwangi, 2006). In addition, avocados are primarily shipped sea freight to Europe which contributes to Kenya's cost competitiveness. Approximately one third of avocado production is exported.

Although smallholders in Kenya have dominated the horticultural sector and the fruit tree sub-sector in particular, they have steadily lost market share during the past decade because of a number of factors. For instance, Snodgrass and Sestad (2005) found that participation by smallholder farmers in the fruit tree value chain is constrained by lack of information and knowledge of the markets, limited access to inputs, limited access to resources and/or weak incentives for upgrading, weak vertical and horizontal linkages within the value chain, and lack of trust among producers, brokers, and exporters. The smallholder farmers' situation has been exacerbated by the introduction of stringent new rules and market standards following increasing consumer concern about food safety, as well as social and environmental aspects of the food supply chain (USAID, 2008). Yet, most small scale producers of the avocado fruit lack the requisite skills and knowledge to undertake control measures against diseases and insect pests' attacks. Furthermore, the cost of compliance makes it economically infeasible for the smallholder farmers, particularly women to continue to engage with the market because of small pieces of land or lack of access to and control over such resources (Mwangi, 2006).

Given the critical role of the avocado value chain in contributing to household income and foreign exchange, coupled with the growing demand for avocado in the export markets, donors such as the USAID teamed up with local business organizations to streamline the chain and improve Kenya's ability to compete in the European Union (EU) market. Some of the value chain upgrading strategies implemented include improving the variety through grafting or top working and changing the governance structure of the value chain to improve the quality of the fruits and forge new and closer relationships between buyers and suppliers (USAID, 2008).This linkage has involved the provision of embedded spraying services by the exporter and negotiated MOUs between producer groups and the exporter. The process has required considerable interventions by the Kenya Business Development Services (KBDS) and other support from

USAID to help prepare smallholders to meet European global gap (EurepGap) standards (Snodgrass and Sebstad, 2005).

To improve the competitiveness of the avocado value chain, the KBDS project engaged new actors and facilitated closer relationships between lead firms (exporters) and avocado smallholders. The project was able to foster market linkages between avocado smallholders and exporters by mobilizing farmer groups—or horizontal linkages—that reduced the transaction costs for exporters to do business with large numbers of smallholders. Additionally, the KBDS established "market-linkage firms" both to mobilize groups and facilitate the provision of grafting, pruning and spraying services, in some cases, as an embedded service and, in other cases, on a fee-for-service basis. New stand-alone service providers—who provide fee-for-service grafting and pruning—also entered the avocado value chain and created an association that promotes quality control. To afford these services, avocado farmers were facilitated to access credit for spraying through farmer groups and the loans were repaid through payments by exporters. The KBDS project encouraged the development of commercial oil processing firms, which has served as an incentive for smallholders to invest in commercial tree fruit production as it ensures a market for the portion of their crops that may be flawed due to weather or disease.

However, despite the aforementioned interventions follow up studies indicate that participation of women in the avocado export market has been extremely limited, while men have benefitted to a greater extent (USAID, 2008). For instance, where interventions involved constituting farmer groups to take advantage of economies of scale and obtain certification standards, the groups tended to be dominated by men, and although wives could attend meetings, husbands were the registered members and held bank accounts in their names (Ibid, 2008). After the intervention, women's participation in the groups was only 28% in Maragua district (Nguru, 2006), suggesting that there is need for concerted efforts to raise women's participation in the value chain. Consequently, integrating women into the avocado value chain requires a deeper understanding of the constraints that limit their participation as well as opportunities that can be harnessed to improve their participation.

The scanty information on the interventions and the level of participation of women in the export value chain notwithstanding, the value chain for domestically marketed avocado, particularly those grown in Western Kenya remains largely unexplored. Besides, there is a dearth of information on the level of participation of women in the domestic value chain compared with that of the export value chain. It is against this background that the study was conducted with the sole objective of identifying leverage points along the avocado value chain, that require intervention to integrate women into agricultural commodity markets. In addition, the study explored the possibility of enhancing market access and participation by women in the avocado value chain through collective action. In particular, the study sought to (i) establish the level of participation of women in the two value chains (ii) identify constraints to and opportunities for women's participation in the value chains (iii) examine the role of collective action in enhancing participation by women in the stages of the value chains and (iv) identify prospects for growth at

the stages of the value chain, such as institutional, technological, financial and market innovations that can be harnessed to improve women's participation.

3. Methodology

The study used a multifaceted approach to generate information for answering the research questions that guided the study. The approaches involved focus group discussions with producers, household surveys for producers, case studies of farmer groups, trader surveys and key informant interviews with other relevant actors along the value chain such as processors, and input suppliers, particularly nursery operators. The study used avocado value chain as a case study and focused on women as the marginalised group. Nevertheless, data were collected on both male and female headed households to obtain generic recommendations that are relevant to the women. Unlike other studies on gender that use male versus female headed households as the basis of comparison, our analysis focuses on two categories of women, namely women in male headed households and those in female headed households.

3.1 Study Sites

The study was conducted in two districts in Kenya, namely Kandara and Marani districts in Central and Western Kenya, respectively. Kandara and Marani districts are located in Murang'a and Kisii counties, respectively. Selection of the two districts was based on the information that was derived from the earlier phase of the project in which the three year panel datasets showed that Kandara and Marani districts had the highest concentration of avocado production and marketing. Likewise, the selection of avocado value chain was backed by findings from the first phase of the project, which indicated that avocado enterprise is one of the most commercialized enterprises among smallholder poor farmers in Kenya and hence more promising for the smallholder farmers. In addition, the findings from the longitudinal datasets were validated through inception visits and key informant interviews with the representatives of the relevant institutions such as the Kenya Horticultural Development Program (KHDP), Horticultural Crops Development Authority (HCDA), Ministry of Agriculture (MoA) at the national and district level and the Promotion of Private Sector Development in Agriculture (PSDA)[2]. The key informant interviews confirmed that the two districts had the highest concentration of avocado production and marketing, but farmers in Kandara district specialized in exotic avocado varieties for the export market whereas those in Marani district focused on local avocado varieties for the domestic market. Furthermore, the avocado value chain appeared to have the potential to integrate marginalised smallholder farmers into commodity markets because of its export and

[2] Promotion of the Private Sector Development in Agriculture (PSDA) is a bilateral technical cooperation programme jointly implemented by the German International Cooperation (GIZ) on behalf of the Government of Germany and the Ministry of Agriculture on behalf of the Government of Kenya. The programme focuses on three thematic areas in agriculture namely, improving policy coordination and the legal framework; value chain development, and promoting resource-friendly technologies.

commercial orientation. Yet, the chain was noted to be entirely male dominated and thus could benefit from interventions that are geared towards enhancing market participation by smallholder women farmers. Likewise, it was necessary to explore reasons for male domination and the effects of men's specialization on women's choice of alternative enterprises. The results are expected to provide recommendations on whether it is economically justified to promote women's integration into the enterprise or consider alternative enterprises where women are more likely to benefit. Similarly, since the study aims at understanding the role of collective action in enhancing participation by the marginalised groups in agricultural commodity markets, the avocado value chain provided an invaluable case study owing to the existence of organised farmer groups in central Kenya that were formed to improve the farmers' returns from avocado marketing.

The findings from the two sites were expected to provide insights into how markets can be organised to work best for the marginalised, particularly women, under export and domestic market orientation. To the extent that the two districts exhibit different production and marketing strategies, it is likely that the chains may involve different actors with different governance structures and hence might require different interventions. While the avocado farmers in Kandara exhibit high degree of export market orientation, the Marani farmers are less integrated into export markets for avocado and rely on domestic markets for their produce. Besides, the degree of market orientation for avocado is reportedly much lower in the case of Marani[3] than it is for the Kandara farmers. Furthermore, there are no organised farmers' groups that focus on avocado marketing in Marani while such groups are well established in Kandara district and are linked to exporters through the Avocado Growers Association of Kenya (AGAK). The groups were formed following a number of interventions on the avocado value chain in the region between 2003 and 2004 such as EurepGap training, which was meant to certify smallholder farmers and improve the quality of avocado in order to harness market opportunities in the international markets. Consequently, studying the avocado chain in the two districts was necessary in order to come up with interventions that are applicable to the two scenarios. Furthermore, given that strategies for enhancing market participation of the marginalised groups may differ depending on certain socio-economic characteristics that may be specific to a given region, it was imperative that the study incorporates other sites with domestic market orientation such as Marani district.

3.2 Sampling Procedure and Design

3.2.1 Selection of respondents for household surveys

Household survey data used in this study were derived from 100 households drawn from each site. Because one of the objectives of the study was to understand the role of collective action in

[3] An interview with a key informant interview, the crops officer for Marani district, during inception visits revealed that in Marani district, unlike in Kandara, avocado production is less commercialized and hence most of the trees found on the farmers farms grow on their own and are usually left untended.

enhancing access to markets by the marginalised groups, sampling of the respondents was done from the existing farmer groups that focus on avocado in the case of Kandara district, while stratified random sampling was used in Marani district where farmer groups are not available. In Kandara, however, a comparison (control) group was drawn from the same localities where households in the treatment group were found. The sampling procedure entailed generating a list of the existing farmer groups that focus on avocado as the main enterprise, although they could be dealing in other enterprises. The farmer groups were drawn from Kandara division, which is the only division in the district. Two out of seven locations, namely Muruka and Ng'araria were selected purposively based on the degree of concentration of the groups and avocado production and marketing. The groups were selected based on a set of criteria such as age, size, group diversity (gender representation), level of activity and cohesiveness as well as the relevance of the group's activities to the study. Older groups with at least 10 members who were actively involved in the production and marketing of avocado were selected. In total, seven out of 10 groups were selected from the two locations. Membership in the seven groups ranged from 13 to 26 per group while the number of female members ranged from 3 to 10.

Sixty five households were selected randomly from the 10 groups that were drawn from the two locations while the remaining thirty five households were drawn from the same locations and villages as the households sampled from the groups. The 65 households were selected from a sampling frame of 143 households drawn from the two locations while paying attention to gender representation and participation in collective marketing. Thus, sampling of the households to be included in the treatment group was stratified based on gender and participation in collective marketing. Efforts were made to ensure diversity in the sample by sampling proportionately from the selected groups.

In Marani district, two out of six locations, namely Ng'enyi and Mwagichana were purposively selected from Marani division, which is the only division in the district. Selection of the two locations was based on the degree of concentration of avocado farmers in the two locations. Two sub-locations and finally two villages were randomly selected from each of the two locations and sub-locations respectively. A total of 100 avocado farmers were selected randomly from a sampling frame consisting of 639 households drawn from eight villages.

3.2.2 Selection of participants for focus group discussions

Focus group discussions (FGDs) were conducted with avocado farmers in each of the two districts. The FGDs were instrumental in providing information for mapping the avocado value chain as well as in identifying other value chain actors that interact with the farmers such as input suppliers, trader, processors and exporters. In addition, the FGDs were used to elicit responses for research questions that sought to understand why men and women choose to participate in certain stages of the value chain and not others. Besides, research questions that

sought to understand value chain governance structures and pathways through which collective action is likely to enhance the integration of the marginalised groups into the agricultural commodity markets were explored using focus groups. The FGDs consisted of farmers belonging to groups as well as those who do not belong to groups. Moreover, participants were required to be knowledgeable and actively involved in the production and marketing of avocado in the study sites.

Seven focus group discussions were conducted in the two sites. Based on observations made during pre-testing, efforts were made to hold separate FGDs for men and women to allow the participants to express their opinions freely, particularly with regards to some sensitive questions pertaining to sharing of proceeds from avocado. Nevertheless, it was not possible to split one of the focus groups in Kandara into men and women only because of low turnout of women. Only two women were present at the time the FGD started. Besides, where separate FGDs for men and women were held, the number of female participants was generally low, averaging 4, which was below the recommended size for a focus group. However, the groups provided consistent findings despite the small size. The number of participants in the FGD ranged from 4 to 10 in the men's FGD and 4 to 6 in the women only FGD

3.2.3 Selection of groups for case studies

Case studies were used to gain an in-depth understanding of the role of collective action in enhancing the participation by women in the avocado value chain. Two avocado farmer groups in Kandara were selected for the case study, because there were no existing organised farmer groups focusing on avocado in Marani. The farmer groups used in the case study were selected based on a set of criteria such as size of the group, gender composition of the group, age of the group, level of activity and relevance of the activities to the project and level of cohesiveness. Two groups, Kawendo B and Kariani Kiharu in Ng'araria and Muruka locations, respectively were selected for the case studies. A checklist focusing on institutional set up of the groups, formal and informal regulations that govern their operations, innovations, benefits and constraints that the groups encounter among others were used as a guide for the case study.

3.2.4 Selection of other chain actors

Snowballing approach was used to sample other chain actors such as input suppliers, exporters, traders (large scale and small scale), and processors. Likewise, actors identified during the FGDs were tracked and interviewed where possible. Some of the chain actors who were identified during the inception visits such as Vegpro, Sunripe and Olivado were interviewed using relevant checklists.

In total, key formant interviews were conducted with five nursery operators (three in Kandara and two in Kisii), 18 traders (11 in Kandara and 7 in Kisii), 4 processors (two large scale, 1

medium scale and 1 small scale processors-not in operation at the time of the interview) and 5 exporters (two small scale and 4 large scale exporters). Some of the processors interviewed included Olivado in Makuyu, Avooil in Thika, Ideal Matunda in Nairobi and Kawendo A, which was a micro-processing plant operated by Farmers' group but is no longer operational due to lack of funds and failure to market the processed products. Exporters such as Ideal Matunda, Keitt Exporters, Kenya Horticultural Exporters (KHE), Vegpro and Kakuzi were interviewed.

3.3 Methods of Data Analysis

Owing to the small sample size of the women and the nature of the research questions, descriptive analysis is used in this study. Qualitative methods entail a narrative of the findings from the case studies on how farmer groups overcome constraints (i.e. institutional, governance or technological innovations) that limit women's participation in the avocado value chain and why women participate or do not participate in some stages of the value chain. Gross margins were computed for each of the actors along the value chain to assess whether or not the actors were generating value along the chain. Cost items used in the estimation of gross margins at the producer level included production costs, such aslabour, both family and hired and variable inputs like fertiliser, pesticides and manure as well as marketing costs incurred on transport. At the local trading and export part of the chain, cost components included procurement costs such as the cost of fruits and labour as well as sales costs such as packaging storage and transport.

4. Results and Discussion

4.1 Characteristics of the Avocado Value Chain

Avocado production and marketing in Kandara revolves around two main exotic varieties namely Fuerte and Hass, whereas in Marani the local variety predominates. The two exotic varieties cultivated in Kandara are mainly for export while the producers occasionally sell some of the fruits that fail to meet quality requirements for fresh exports to local traders, consumers and processors. The export varieties are usually sorted according to grades and sizes. Grade 1, which is mainly purchased by exporters, refers to premium quality avocado and is the first to be harvested at the beginning of the season. Grade 2 and other non-graded avocado are sold to other buyers, who process or sell the fruits to consumers because these are generally mature fruits that are nearing ripening. On the other hand, local avocado is produced specifically for the domestic market although some of the fruits are sold in regional markets at the border towns of Kisii and Tanzania. Local avocado are sold according to sizes and are hardly graded.

Figures 1 and 2 show avocado value chains for Kandara and Marani respectively. Figure 1 suggests that the chain for the export avocado is elaborate and includes actors such as nursery operators, farmers, traders (both small and large), brokers, processors and exporters while the chain for the locally marketed avocado such as the one in Marani includes nursery operators, farmers, brokers and traders. Other potential market channels for the avocado produced in Kandara and Marani include supermarkets chains such as Uchumi and Nakumatt, although these channels were not mentioned by the sampled producers during individual interviews and focus group discussions. It is highly likely that the supermarkets do not purchase the fruits directly from the farmers and hence are not considered as important buyers. Further follow up of the chain revealed that the supermarkets contract a supplier who buys fruits from selected individual farmers.

Owing to the stringent quality requirements for the export avocado, producers in Kandara require more business development services (BDS) than do producers in Marani. Consequently, the producers in Kandara require BDS such as credit with which to purchase inputs like pesticides; spraying services to ensure that only the recommended pesticides and the right quantity is sprayed; training on certification standards; technical advice on good agricultural practices; harvesting and grading services to ensure that the fruits meet the specifications required by the buyer; and market information to be able to adjust to changes in supply and demand in the international market. On the other hand, producers in Marani require fewer services than those in Kandara because the amount of effort and resources devoted to avocado is limited owing to the low value of the crop. In Marani, the producers require technical advice on crop husbandry, particularly on diseases and pest management; market information on where and when to sell as

well as who to sell to; credit and reliable means of transport with which to access alternative markets that offer better prices.

In Kandara, there is sufficient enabling environment to facilitate the production and marketing of avocado as shown by the presence of farmer groups that focus on avocado marketing. In addition, There is an organisation such as the Avocado Growers Association of Kenya (AGAK) that coordinates the farmer groups and facilitates the linkage between producers and exporters; established government regulatory bodies such as the Horticultural Crops Development Authority (HCDA) and associations such as the Fresh Produce Exporters Association of Kenya (FPEAK) that regulate the quality of avocado right from production to export. Furthermore, some form of contract farming exists in Kandara, which might help improve efficiency of the chain by reducing transaction costs associated with the search for information on availability of the produce, prices and bulking of the produce. Similarly, proximity of the producers in Kandara to major towns such as Nairobi where the majority of the exporters are located seems to favour them over those in Marani. In Marani, however, the only enabling environment is the good road network that links the producers to major towns such as Kisumu, Nakuru, Migori, and Homabay and the presence of institutions and individual nursery operators that provide clean planting material. Nevertheless, the producers from Kisii face stiff competition from suppliers located in the aforementioned towns and are not able to gain market share in these towns because they lack comparative advantage. Detailed information on the characteristics of value chain actors as well as availability of and access to BDS is discussed in the next section.

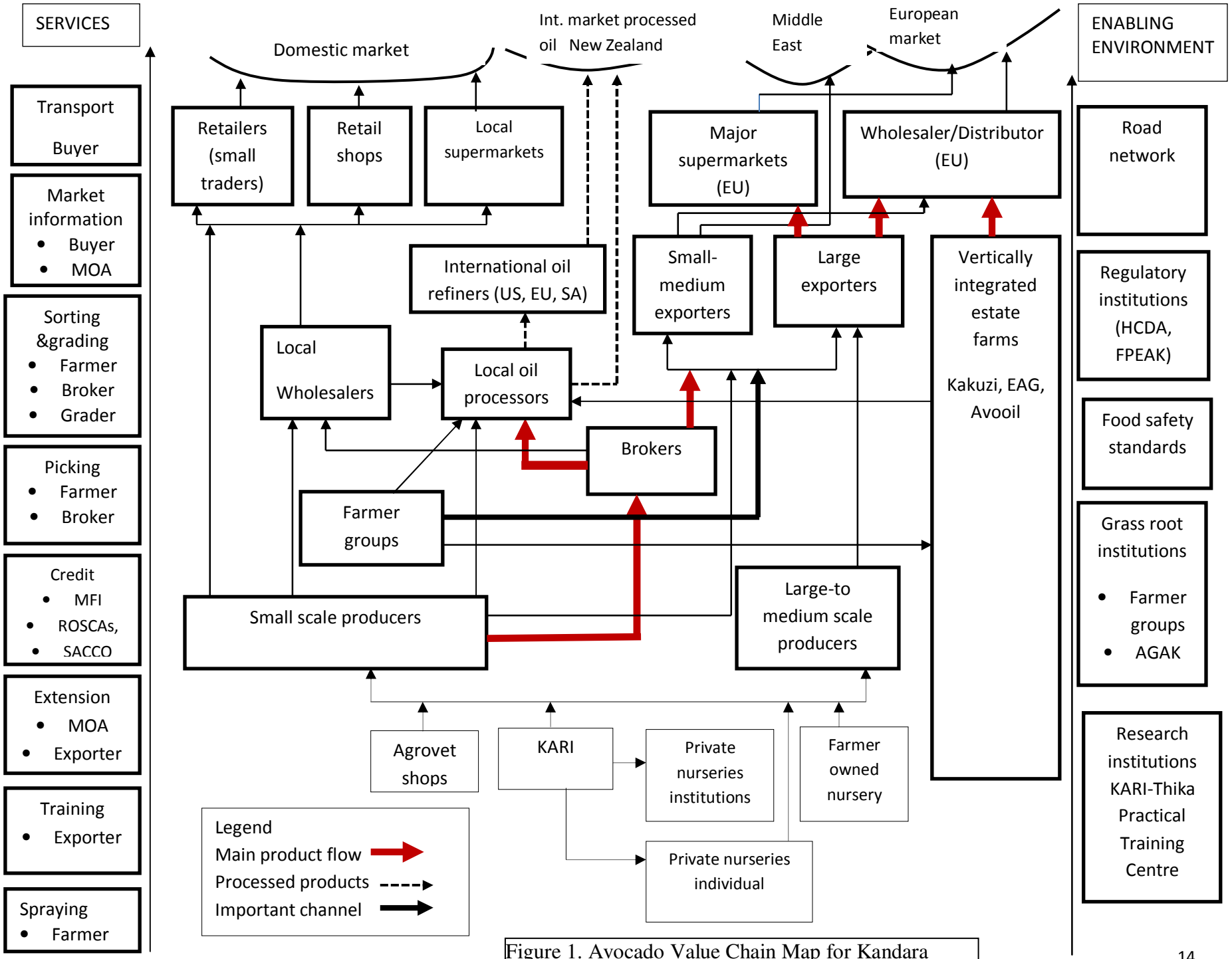

Figure 1. Avocado Value Chain Map for Kandara

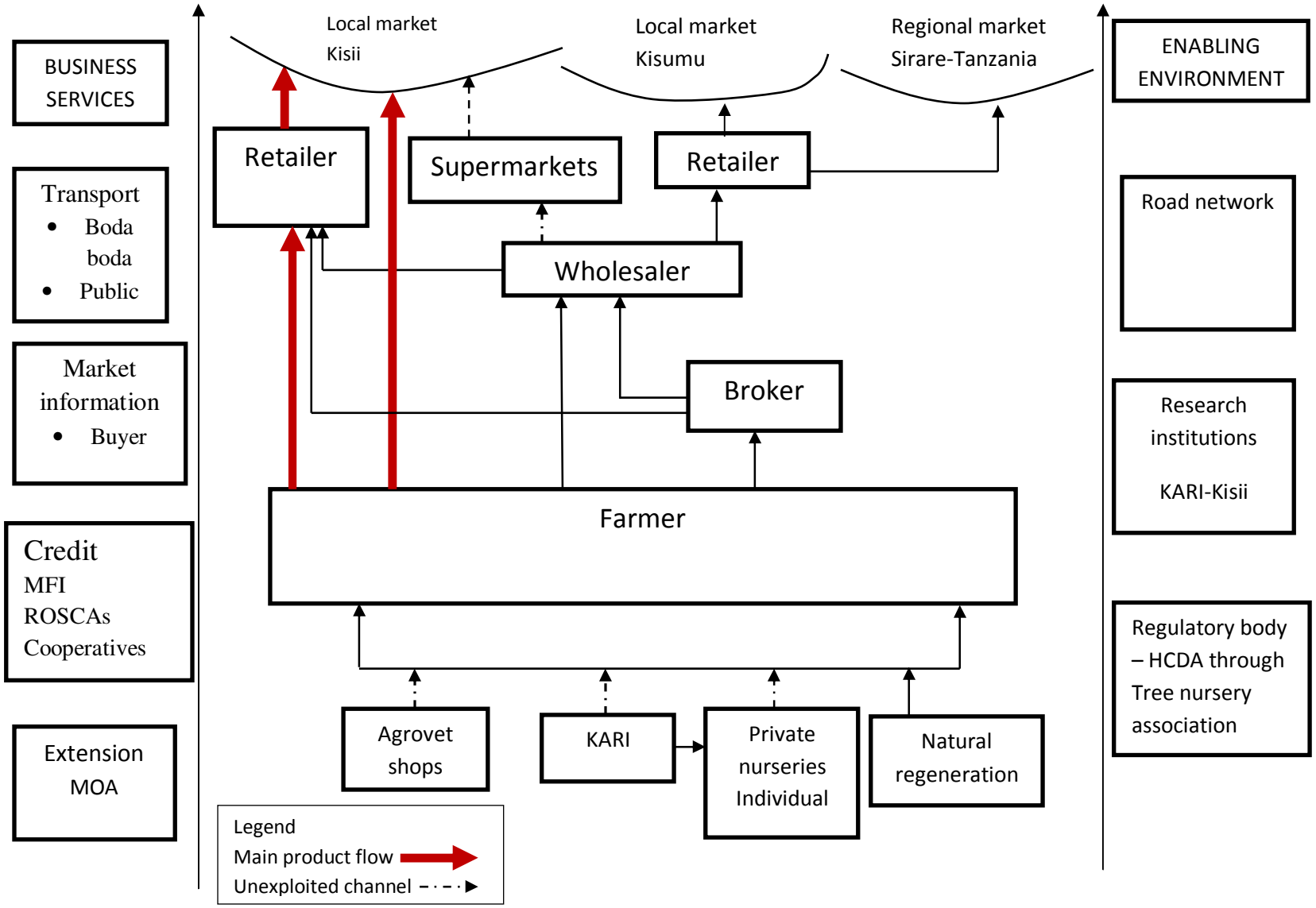

Figure 2. Avocado Value Chain Map for Marani

4.2 Value Chain Actors

4.2.1 Nursery operators

Nursery operators play a crucial role in the avocado value chain by producing and supplying high quality germplasm that ensures that the incidence of disease infestation is reduced. High quality germplasm is of paramount importance as the quality of the germplasm directly affects yields and returns. There are two main types of nursery operators, namely institutional and individual nurseries. Institutional nurseries are well established but are few in number and are operated by private or public companies. The Kenya Agricultural Research Institute (KARI) is the main public institutional nursery that sells fruit tree seedlings in the two sites. Individually operated nurseries are the majority and are either managed by the farmers or those who specialise in the tree seedling nurseries in towns. However, the majority of individual operators are informal operators and do not have phytosanitary certificates. The individual operators are currently being sensitised of the need to register as nursery operators and are being assisted by the Horticultural Crops Development Authority (HCDA) to obtain phytosanitary certificates.

Of the five nurseries visited during the key informant surveys, two were public institutions (KARI Thika and KARI Kisii), two were individual operators and one was a private institutional nursery. All the nursery operators were found to raise different types of tree seedlings such as fruits, medicinal, timber and ornamental among others. Diversification was reported to be the only strategy to overcome the low demand for specific fruit tree seedlings, particularly avocado seedlings in Kisii County where farmers rely on local varieties that grow naturally. Nursery operators raise seedlings of Hass and Fuerte because this is what the market needs. Nearly all the nursery operators interviewed stock more Hass than Fuerte seedlings because farmers in Kandara, for instance, have been sensitised on the increasing demand for Hass variety in the export market and hence they are top working old trees of Fuerte with scions of Hass. In the majority of the cases, about 90% of the avocado seedlings raised in the nurseries are Hass while the Fuerte variety is raised mainly as rootstock. In Marani, where avocado is largely local, farmers are increasingly being convinced to replace the local varieties with low back grafted Hass varieties that were developed for land scarce regions such as Kisii. The operators purchase seeds from the locality to raise rootstocks while buds are purchased from appointed suppliers who can be farmers or institutions. In Kandara, the youth collect seeds of avocado from nearby markets and sell them to large scale nursery operators while in Kisii, women who operate small food kiosks stock and sell seeds to the nursery operators following sensitisation by KARI and the Ministry of Agriculture that selling of seeds can be an alternative way of augmenting the women's income. In Western region for example, consumers are being sensitised on the nutritive value of avocado and are increasingly incorporating it in their diets. Thus, the women have become an important source of seeds for rootstock.

In the private institutional nurseries where there is need to hire labour, there is clear division of roles and responsibilities by gender and women constitute the majority of the employees. While men are responsible for managerial positions as well as tasks that require physical strength, women are employed to do routine tasks that need keenness such as preparing potting media, filling the tubes, sorting and cleaning seeds before planting, grafting and untying healed grafts and planting of seeds. On the other hand, individual nurseries are generally operated by male managers and grafting is mainly done by men.

The avocado seedling business is said to be increasing in importance as the demand for avocado grows because of increase in awareness of the health benefits of avocado. Likewise, the producers have been sensitised on the benefits of using superior quality germplasm. The main buyers of seedlings are small scale farmers, but institutional nurseries sell to NGOs, and large scale avocado producers. Spot market transactions are common among the nursery operators, although some of them, especially institutional nurseries have established long term relationships with customers such as NGOs, CBOs and some vertically integrated export companies that cultivate their own avocado such as East African Growers. These market arrangements are not necessarily contractual, but are based on trust and build on customer brand loyalty[4]

The operators generally provide business support services such as training on nursery management, technical advice and transport to customers who buy seedlings in bulk. Likewise, the buyers benefit from market information in addition to learning about seedlings of other tree species. The grafted seedlings are generally sold at KES 100 per seedling, but a 10% discount is given on bulk purchases. The tree nursery operators' association regulates the quality of the seedlings through the HCDA by facilitating registration of its members, linking the operators with buyers and providing starting capital or inputs and technical information to the members. However, the association is thought to have stringent rules that may act as a disincentive to prospective nursery operators who are financially less endowed. For instance, to be a member one is required to have a nursery with a minimum of 2500 seedlings, have some technical knowledge on nursery management and strictly adhere to laid down quality standards failure to which the person risks being deregistered.

4.2.2. Producers

4.2.2.1 General characteristics of the sampled households

The sampled households rely on crop production as the main source of income, but diversify their income sources to mitigate income shocks. In addition to crop production, the sampled households derive income from livestock and off-farm activities. As shown in Table 1, crop

[4] More detailed information on market arrangements and governance structures for the entire value chain is provided in the appendix

income accounts for over 50% of the total income in both male and female headed households in the study sites. However, crop income accounts for a slightly higher proportion of income in female headed households than it does in male headed households probably because women have limited access to off-farm activities as indicated in Table 1. In this case, the contribution of off-farm income is higher in male headed than in female headed households in Kandara and Marani. According to the data, avocado accounts for 12% and 6% of the total income and 23% and 11% of crop income in Kandara and Marani, respectively, suggesting that avocado enterprise is a major source of income in Kandara compared to Marani. In the two sites, the contribution of avocado to total and crop income is higher in the male than in the female headed households, although the difference is higher in Kandara than in Marani.

Table 1.Share of Income Sources in Total Income, by Gender of Household Head

	Kandara			Marani		
	Male (n=65)	Female (n=35)	Total (N=100)	Male (n=62)	Female (n=38)	Total (N=100)
Total income	262108 (267876)	128003 (84731)	215172 (230189)	143690 (105875)	105526 (161327)	129188 (130310)
% Livestock	21	25	22	13	16	14
% Off-farm	27	18	24	31	23	28
% Crops	52	57	54	56	60	57
% avocado in total income	13	10	12	6	5	6
% Avocado in crop income	25	19	23	11	10	11

Source: Household survey

Avocado ranks among the five most important enterprises in Kandara, which explains its higher contribution to total and crop income in Kandara than in Marani. As shown in Table 2, avocado was ranked as the first and the second most important enterprise in Kandara while it was ranked fourth in women only group, fifth in two men groups and tenth in another women only group in Marani. While men in Kandara consider avocado to be the most important crop, women rank it second after banana because they tend to have more control of income from banana than they have control of income from avocado. In addition, women prefer enterprises that meet food security as well as income needs. In Marani, avocado enterprise seems to be less important to both men and women because the market for the produce is less developed and both men and women tend to prefer food crops such as maize and beans and cash crops like coffee.

Table 2. Ranking of Agricultural Enterprises by Farmers in Kandara and Marani

	Kandara			Marani			
	Ngararia	Muruka		Mwagichana		Ngenyi	
Rank	Mixed	Men	women	Men	women	Men	women
1	Avocado	Avocado	Banana	Maize and beans	Maize and beans	Maize and beans	Maize and beans
2	Coffee	Macadamia nuts	Avocado	Banana	Finger millet	Banana	Coffee
3	Maize and beans	Coffee	Maize and beans	Coffee	Avocado	Coffee	Banana
4	Banana	Banana	Cattle	Tea	Banana	Tea	Tea
5	Dairy	Dairy	Coffee	Avocado	Vegetables	Avocado	Dairy

Source: Focus group discussion

4.2.2.2 Socioeconomic Characteristics of producers

Table 3 provides a summary of socio-economic and demographic characteristics of avocado producers in Kandara and Marani. The producers are herein defined as those responsible for the management of avocado trees. Of the sampled producers in Kandara and Marani, 51% and 58% are women respectively, and the majority of the female producers are widowed. The average age of producers ranges from 52 years in Marani to 63.5 years in Kandara. On average, the producers have attained about six years of formal education, which is an equivalent of primary school education. However, the level of education attained by male producers is higher than that of female producers, which averages 5 years in both the sites. The average household size ranges from 4 to 5 people in Kandara and Marani respectively. Nearly all the respondents (93%) in Kandara belong to associations and 73% and 65% of the respondents belong to agricultural and avocado groups respectively. Likewise, slightly more female than male producers belong to avocado farmer groups. On the other hand, 74% of the respondents in Marani belong to groups and only 25% of them belong to agricultural groups. Groups dealing in avocado production and marketing are non-existent in Marani while the majority of the respondents belong to non-agricultural groups. The proportion of men and women producers belonging to associations does not seem to differ by a significant margin in both the sites.

Table 3. Socioeconomic and Demographic Characteristics of Producers

	Kandara			Marani		
	Man (n=49)	Woman (n=51)	All (N=100)	Man (n=41)	Woman (n=58)	All (N=100)
Age	63.9(11.0)	63.2(11.4)	63.5 (11.1)	50.6(14.3)	52.9(15.7)	52(15.1)
Education	8.47(4.22)	5.04 (3.64)	6.72(4.26)	7.80(3.72)	5.02(3.89)	6.18(4.04)
Marital status						
Married (%)	82	31	56	95	41	64
Divorced (%)	0	0	0	0	2	1
Widowed (%)	14	67	41	5	57	35
Single (%)	0	2	1	0	0	0
Separated (%)	2	0	2	0	0	0
Household size	4.22(2.21)	3.55(1.96)	3.88(2.10)	5.60(1.87)	4.59(2.21)	5.01(2.12)
Membership in groups	94	94	93	79	71	74
Agricultural (%)	76	71	73	29	22	25
Avocado (%)	61	69	65	0	0	0
Non-agricultural (%)	67	67	67	67	62	64

Source: Household survey

4.2.2.3 Farm characteristics

Summary statistics of farm characteristics of the sampled producers are provided in Table 4. The data suggest that producers in Kandara own larger land sizes than those in Marani. On average, producers own about 2.13 acres in Kandara and 1.40 acres in Marani. A cursory look at the data reveals that there is no major variation in land sizes owned by male and female managers in both the sites. However, male managers in Kandara tend to allocate significantly more land to avocado than do female managers ($p<0.05$). In Kandara, producers allocate an average of 20% of the total land to avocado, with the proportion varying between 15% for women and 26% for men. In Marani, the producers allocate about 13% of the total land to avocado and male and female managers allocate nearly the same proportion of land to avocado (13%).

Three exotic varieties namely Fuerte, Hass and Pinkerton as well as local varieties are cultivated by producers in Kandara. On the other hand, local variety of avocado dominates in Marani. Hass and Fuerte are the two main varieties produced and marketed in Kandara. As shown in Table 4, 92% and 88% of the sampled producers cultivate Fuerte and Hass respectively and only 14% have Pinkerton variety. The data suggest that more female than male managers produce Fuerte while the converse is true for Hass. The sampled producers in Kandara have 9 and 11 productive trees of Fuerte and Hass respectively. However, the data suggest that female managers tend to have fewer trees of Fuerte and Hass than do male managers but the differences are not significant. While male managers have an average of 10 and 14 trees of Fuerte and Hass

respectively, female managers have 7 and 9 trees. To the extent that Hass was recently introduced, the rate of uptake of the variety appears to be slower among women than among men. Hass is the most preferred variety by the producers in Kandara because it is liked by the majority of the buyers such as exporters, traders and processors since it fetches better prices in the domestic and export market. In addition, Hass is reported to have superior attributes compared to Fuerte. For instance, it is less perishable than Fuerte, less prone to attack by pests and diseases and can conceal bruises when scratched during harvesting as opposed to Fuerte, which remains green upon ripening thus revealing the marks. Besides, Hass has a longer harvesting period than Fuerte and does not ripen at once.

In Marani, all the sampled producers grow local varieties of avocado, which are available in different shapes and sizes. On average, the producers in Marani have 6 productive trees and female managers have fewer trees than do male managers. Similarly, male managers tend to produce more fruits per tree per year than do female managers irrespective of the study site with the exception of Hass variety where the number of fruits produced per tree is higher in households where women are responsible for avocado.

Table 4. Farm Characteristics of Producers

	Kandara			Marani		
	Man (n=49)	Woman (n=51)	All (N=100)	Man (n=42)	Woman (n=58)	All (N=100)
Land owned (acres)	2.01(1.39)*	2.24(2.23)	2.13(1.86)	1.43(1.17)	1.38(0.89)	1.40(1.01)
Land rented in	0.15(0.38)	0.10(0.33)	0.13(0.36)	0.41(0.49)	0.23(0.44)	0.30(0.47)
area under avocado	0.53(0.56)	0.33(0.33)	0.43(0.47)	0.19(0.49)	0.18(0.44)	0.18(0.15)
Varieties cultivated						
Fuerte (%)	88	96	92	0	0	0
Hass (%)	90	86	88	0	0	0
Pinkerton (%)	22	6	14	0	0	0
Local (%)	6	10	8	100	100	100
No. of productive trees						
Fuerte	10.4(22.6)	7.0(7.7)	8.6(11.7)	0	0	0
Hass	14.3(17.3)	8.7(9.63)	11.5(14.2)	0	0	0
Pinkerton	1.8(1.2)	0	1.4(1.3)	0	0	0
Local	1.7(1.2)	1.6(0.5)	1.6(0.7)	6.5(5.9)	5.6(4.7)	6.0(5.2)
Productivity++						
Fuerte	644(550)	559(376)	599(466)	---	---	---
Hass	431(382)	461(459)	439(410)	---	---	---
Local	---	---	---	376(297)	318(282)	342(289)

*Figures in parentheses are standard deviations; [++]productivity is measured by number of fruits harvested per tree per year
Source: Household survey

Production and marketing costs

The results indicate that use of variable inputs on avocado is minimal, with the exception of manure application, which the producers tend to apply on high value avocado such as Fuerte and Hass as shown in Figure 3. Consequently, labour accounts for the largest proportion of total variable costs in avocado production, especially in Marani where producers leave avocado trees untended due to low prices and lack of organised market. Transport cost, which is the only component of marketing costs, accounts for negligible proportion of the total variable costs particularly in Kandara where most producers sell avocado at the farm gate.

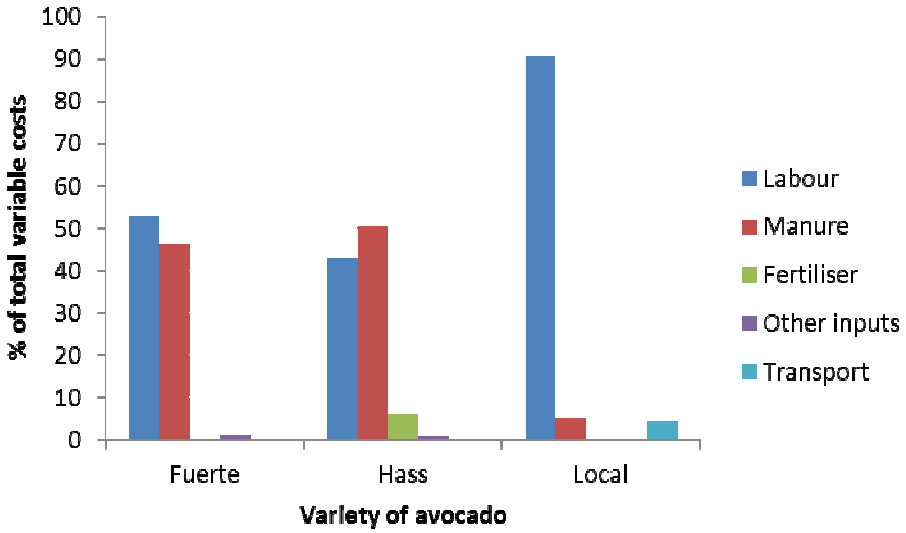

Figure 3. Components of Total Variable Costs for Producers, by Variety

4.2.2.4 Responsibility for production, sales and avocado revenue

Table 5, shows the proportion of men and women who have control of land under avocado as well as avocado sales and revenue in households with male and female managers. A closer look at the data reveals that ownership of avocado fields is dominated by men in both Kandara and Marani, despite a higher proportion of women than men managing the fruits in both the sites. Sixty five per cent and 62% of the men own avocado fields in Kandara and Marani respectively. Likewise, more female than male managers tend to own avocado fields in households where women are the managers of the crop. For instance, 69% and 64% of the women in households where women are the managers of avocado own fields in Kandara and Marani respectively. On the other hand, none of the women in Kandara and only 2% of the women in Marani own

avocado fields in households where men are the managers of avocado. The observed trend can be attributed to the fact that land belongs to the household head who more often than not is male and the women assume ownership of the land upon the death of the husband. Thus, the majority of the women who reported to own land under avocado are mainly widows. On the other hand, women in male headed households are responsible for the management of avocado but they do not own the field.

Table 5. Decision on Sales and Control of Productive Resources and Revenue from Avocado, by Gender of Manager

	Kandara			Marani		
	Man	Woman	All	Man	Woman	All
Ownership of avocado field						
Man (%)	100	31	65	98	36	62
Woman (%)	0	69	35	2	64	38
Decision to sell avocado						
Man (%)	47	4	25	34	2	16
Woman (%)	4	82	44	8	81	50
Both man & woman (%)	49	14	31	58	17	34
Control of avocado revenue						
Man (%)	45	2	23	32	0	13
Woman (%)	2	73	38	8	79	49
Both man & woman (%)	53	25	39	60	21	38

Source: Household survey

According to the data, the decision on when and where to sell the produce varies across the different household typologies, but there is no major difference across the sites. In general, more women than men are involved in making decisions on the sales in Kandara and Marani, but the proportion of women involved in decision making on sales is higher in Marani (50%) than in Kandara (44%). Likewise, more women tend to make decisions on sales in households where women are managers than in households where men are managers. For instance, in households where women are responsible for avocado, 82% and 81% of them make decisions regarding sales of avocado in Kandara and Marani respectively. However, in households where men are the managers, only 4% and 2% of the women make decisions on when and where to sell avocado. In most cases where women make decisions on sales in households where men are the managers, the male managers are more often than not other members of the household and are not necessarily the household head.

The results suggest that men are more likely to be involved in making decisions on sales where the value chain is well developed and the returns from the enterprise are high as in Kandara. For instance, 47% of the men in households with male managers make decisions on sales in Kandara compared to 38% in Marani. Nonetheless, of paramount importance is the finding that joint decision making on sales appears to be more prevalent than sole decision making by men and

women in households where men are responsible for the crop. However, a cursory look at the data suggests that joint decision making on sales is predominantly practiced among male managers in Marani (58%) compared to those in Kandara (49%). Likewise control of proceeds from avocado appears to follow a similar pattern as that of sales. For instance, women in both the study sites are more likely to control proceeds from avocado if they come from households where they are responsible for the crop than where men are responsible. This can be attributed to the fact that the majority of the women managers are widows who have assumed the responsibility of the household head and hence participate in deciding on production, sales and use of proceeds. Similarly, in households where men are the managers, more men in Kandara than in Marani control the proceeds while joint decision making on proceeds is more predominant in Marani than in Kandara in households where men are responsible for avocado. The tendency for men to dominate control of proceeds in Kandara is attributed to the expected returns from the avocado. In Marani, the results from the focus group discussions suggest that men are more likely to be involved in controlling proceeds from avocado when the volumes sold are large enough to generate large sums of money.

To gain more insight into women's role in production, decision to sell and control of revenue from avocado, we explore whether there are differences in the level of involvement of women managers in male headed and female headed households. A summary of the proportion of women responsible for production, sales and revenue from avocado in male and female headed households is provided in Table 6. The data suggest that only 25% and 34% of the women in Kandara and Marani, respectively, are responsible for production in male headed households while nearly all the women manage avocado in female headed households. Yet, on average more women than men manage avocado in both Kandara (51%) and Marani (58%). Thus, it is evident that the majority of the female managers are from female headed households and where men are the household heads, men tend to take responsibility for the production of avocado. Similarly, fewer women than men make decisions on sales in male headed households and the proportion of women deciding on when and where to sell in male headed households is smaller in Kandara (14%) than in Marani (21%). In both the sites, the majority of the male headed households prefer joint decision making on sales than sole decision making by men or women. For instance, 48% and 55% of the respondents in male headed households in Kandara and Marani decide jointly on when and where to sell avocado. A look at the variation in decision making on sales by grade and gender reveals that joint decision making on sales is common when the avocado involved are of inferior grade such as grade 0 and grade 2 as shown in Figure 4. However, when the avocados are of premium quality such as grade 1, which are mainly for export, men tend to take the leading role in decision making on sales.

Table 6. Responsibility for Production, Sales and Revenue, by Gender of Household Head

	Kandara			Marani		
	Male (n=65)	Female (n=35)	All (N=100)	Male (n=62)	Female (n=38)	All (N=100)
Production (%)						
Man	75	0	49	66	3	42
Woman	25	100	51	34	97	58
Sale decision (%)						
Man	38	0	25	23	3	16
Woman	14	100	44	21	97	50
Both man and woman	48	0	31	55	0	34
Control of revenue (%)						
Man	35	0	23	20	3	13
Woman	5	100	38	20	97	49
Both man and woman	60	0	39	60	0	38

Source: Household survey

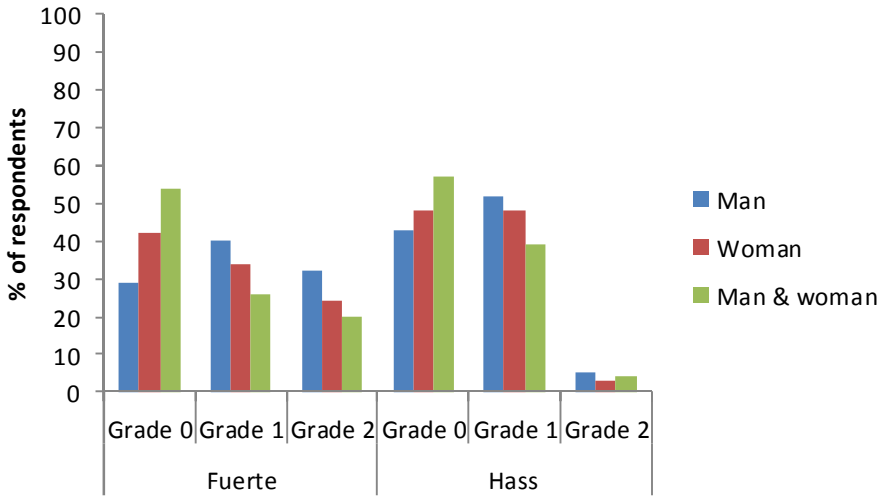

Figure 4. Decision making on Sales, by Grade of Avocado and Gender of the Manager

Further, Table 7 suggests that in male headed households, fewer women have control of revenue from avocado particularly in Kandara where the proportion of women controlling revenue is 5% compared to 20% in Marani. Likewise, joint decision making on proceeds from avocado is more prevalent in the two sites than individual decision making by either male or female managers. Table 7 shows the proportion of male and female managers who are responsible for production and control of revenue in male and female headed households. According to the data, more women tend to control production and revenue in female headed households. However, only 3% and 14% of the women are responsible for production and control of revenue in male headed households in Kandara and Marani, respectively. Like in decision making on sales, joint control of revenue is predominant in male headed households where men are responsible for production in both Kandara and Marani

Table 7. Responsibility for Production and Control of Avocado Revenue, by Gender of Household Head

	Kandara			Marani		
Responsibility and control	Male	Female	All	Male	Female	All
Male responsible -Male control (%)	34	0	22	20	3	13
Female responsible –Female control (%)	3	100	37	14	97	46
Female responsible-Male control (%)	1.5	0	1	0	0	0
Male responsible-Female control (%)	1.5	0	1	5	0	3
Male responsible -both male &female control (%)	40	0	26	41	0	26
Female responsible -both male &female control (%)	20	0	13	20	0	12

Source: Household survey

4.2.2.5 Marketing of avocado

Table 8 provides summary statistics of the quantities produced and marketed and the proportion of producers marketing avocado to different market channels by gender of the manager and the household head. The results suggest that avocado production is more commercialised in Kandara than in Marani. However, the level of commercialisation can be considered to be relatively high in both the sites as indicated by the proportion of output that is sold. In Kandara, for instance, the producers sell an average of 78% and 90% of Fuerte and Hass produced respectively while 61% of the local variety produced in Marani is marketed. In both the study sites, there is no major difference in the proportion of produce sold by female managers in male headed households and female managers in female headed households. As shown in Table 8, female managers in male headed households sell nearly the same proportion of avocado produced as do female managers in female headed households and the same is true of male managers in male headed households.

The avocado value chain in Kandara is well developed and elaborate as suggested by the number of actors involved in the chain namely, exporters, brokers, processors, retailers (small traders),

wholesalers (large traders) and consumers. As shown in Table 8, brokers and exporters are the main players in the avocado value chain in Kandara because they buy the bulk of the avocado sold by the producers in addition to buying from the majority of the producers. On the other hand, other buyers such as retailers, wholesalers, processors and consumers form part of the value chain, but they are not as important as brokers and exporters. Indeed, processors and consumers purchase only 2% and 0.2% of Fuerte and 0% and 1% of Hass variety, respectively. On average, brokers buy 59% and 56% of the Fuerte and Hass produced respectively while exporters buy 16% and 35% of Fuerte and Hass respectively. The data presented in Table 9 indicate that higher prices for has are offered by exporters and processors while those for Hass are offered by retailers and exporters. . Further, the data reveal that producers realise lower gross margins when they sell Fuerte and Hass to brokers than when they sell through other channels. Although gross margins realised from selling Hass to retailers and wholesalers is higher than that from brokers and exporters, the proportion of producers selling to such buyers is small, because they are reported to buy small quantities than do brokers and exporters.

Reasons provided by the producers for selling to brokers and other buyers are presented in Table 10. The majority of the producers (72%), who are mainly from Kandara, sell to brokers because of limited options while those selling to exporters prefer them to other buyers because they offer better prices (39%) or they are bound by contracts to do so (45%). However, findings from the focus group discussions show that the propensity to sell to brokers is high among producers in Kandara because brokers are said to pay on the spot in addition to providing services such as picking and grading. Exporters, on the other hand, take at least two weeks to remit payments to the groups and they do not bear the cost of picking and grading. Furthermore, the producers have to transport their produce to a designated collection point to be able to sell to exporters while brokers meet the cost of bulking the fruits as well. Another advantage of selling to brokers as reported in the focus group discussion is the low rejection rates since brokers hire professionals to pick and grade the fruits and provide information on the prices and grades of the fruits at the farm gate unlike the exporters who provide information on the prices only after sorting and grading the fruits at their respective business premises. Likewise, brokers are reported to buy nearly all the fruits harvested irrespective of their quality since they sell to more than one type of buyers. Brokers are reported to sell to exporters, processors and wholesalers who have different quality requirements. In Kandara, farmers indicated that they would prefer to sell directly to exporters or processors without being linked by a third party organisation such as AGAK because the aforementioned buyers offer better prices than brokers.

The data suggest that in Kandara, the proportion of avocado sold to brokers and exporters varies with the type of household. For instance, female managers in male headed households and female headed households tend to sell a larger proportion of their produce (Fuerte and Hass) to brokers compared to the proportion sold by male managers in male headed households. On the contrary, male managers in male headed households sell a larger proportion of Fuerte and Hass to exporters than the proportion by female managers in male and female headed households.

Consequently, the results suggest that women are more likely to sell to brokers than they are likely to sell to exporters. To the extent that membership in agricultural groups and particularly avocado farmer groups is a prerequisite for securing linkage with the exporters, male managers tend to have more access to exporters than female managers because only household heads are considered as registered members upon joining the group. Women, on the other hand, can only become members of such groups when they assume the responsibility of the head of the household following the death of their husbands.

In Marani, however, the main buyers of local variety are retailers, wholesalers and consumers although the producers occasionally sell to brokers. On average retailers, wholesalers and consumers buy 38%, 32% and 24% of the avocado sold respectively while brokers buy an average of 6% of the produce and the majority of the producers in Marani sell to retailers (40%). According to Table 10, the majority of the producers, who are mainly from Marani, sell to consumers because they offer better prices (43%) compared to other buyers and in some cases, they are preferred because they are the only available buyers (46%). The producers prefer to sell to local traders (retailers) because they are usually available throughout the year. These local traders are generally women who buy fruits at the farm gate and organize for their own transport to the nearest markets such as Nyakoe and Daraja Mbili in Kisii town. Brokers and wholesalers (large scale traders) are reported to be seasonal and only frequent the farms when there are shortages of avocado in the major growing areas. During this period, wholesalers and brokers come from as far as Nairobi to search for avocado. The results indicate that there is no major variation in the type of buyers across the household typologies in Marani and that the proportion of avocado sold to the different types of buyers varies marginally between female managers in male headed households and those in female headed households. Thus, the results suggest that where the market chain is less elaborate as in the case of Marani, men and women tend to participate in all the stages of the value chain in equal measures.

Table 8. Quantities Produced and Marketed and Proportion of Producers Selling to Different Market Channels , by Gender of Household Head and Manager of Avocado

	Male-Male			Female-Female			Male-Female			All		
	Quantity[+]	%sold	%selling	Quantity	%sold	%selling	Quantity	%sold	%selling	Quantity	%sold	%selling
Fuerte												
Produced	4615(6796)*	-	-	4151(5206)	-	-	2465(1699)	-	-	4075(5650)	-	-
Marketed	3881(5033)	78	93	3044(3300)	80	100	2051(1272)	78	94	3272(4003)	78	96
Consumer	20(126)	0.4	2	0	0	0	0	0	0	9.09(85)	0.2	1
Retailer	285(776)	9	12	326(1091)	7	9	107(413)	6	6	270(861)	8	10
Wholesaler	736(2177)	17	17	320(722)	19	21	0	0	0	459(1566)	15	16
Broker	1757(4624)	51	58	2098(3347)	63	70	1516(1489)	72	75	1838(3771)	59	65
Processor	161(1016)	2.5	2	195(947)	3	6	0	0	0	146(892)	2	3
Exporter	684(1365)	20	33	104(361)	8	12	401(646)	22	38	426(1021)	16	26
Hass												
Produced	6003(8895)	-	-	4099(4816)	-	-	3403(3636)	-	-	4924(7058)	-	-
Marketed	5581(8670)	93	95	3373(4228)	82	86	3070(3391)	90	100	4445(6829)	90	93
Retailer	119(550)	2	5	0	0	0	0	0	0	61(396)	1	2
Wholesaler	1034(4039)	7	11	50(191)	8	7	0	0	0	556(2953)	6	8
Broker	2425(5074)	52	55	1823(3195)	60	61	2059(3077)	64	69	2169(4207)	56	59
Processor	2.38(15.43)	2	2	0	0	0	0	0	0	1.22(11)	1	1
Exporter	2380(7376)	36	38	1038(3150)	32	33	1011(2531)	36	44	1704(5616)	35	38
Local[++]												
Produced	2963(5109)	-	-	1345(1041)	-	-	2075(2810)	-	-	2174(3613)	-	-
Marketed	2181(3586)	64	90	1020(964)	58	89	1755(2863)	60	90	1661(2732)	61	90
Consumer	651(3282)	30	22	295(907)	29	30	85(182)	5	35	394(2171)	24	27
Retailer	731(1630)	34	41	315(410)	31	41	911(2423)	52	35	628(1548)	38	40
Wholesaler	630(1527)	29	29	377(284)	37	24	632(2017)	36	20	531(1398)	32	25
Broker	169(583)	8	10	33(134)	3	5	128(316)	7	20	109(410)	6	10

*Figures in parentheses are standard deviations; [+]quantity of avocado sold is given in pieces (fruits); [++]Values are reported for local for Marani only

Source: Household survey

Table 9. Prices and Gross Margins for Producers, by Type of Buyer

	Fuerte		Hass		Local[a]	
Buyer	Price	GM[b]	Price	GM	Price	GM
Consumer	1.00	1.15	---	---	4.26	5.53
Retailer	1.09	0.50	3.50	2.97	2.10	0.92
Wholesaler	1.16	0.77	2.71	2.31	2.09	0.91
Broker	1.23	0.53	2.21	1.27	1.64	1.22
Processor	2.17	1.32	1.60	1.20	---	---
Exporter	2.77	1.85	3.47	2.01	---	---

[a]Prices and gross margins for local variety are for avocado produced in Marani and are reported in KES per fruit;
[b]GM refers to gross margin
Source: Household survey

Table 10. Reasons for Choosing Various Marketing Channels

Reason	Consumer (n=28)	Retailer (n=52)	Wholesaler (n=40)	Broker (n=79)	Exporter(n=33)	Total (N=196)
Only one available	46	63	53	72	6	61
Better prices	43	13	15	3	39	14
Nearest	7	15	10	9	3	11
Contractual arrangement	0	0	0	1	45	1
No sorting or grading	0	2	7.5	0	0	1
Exporter delayed to collect produce	0	0	0	2.5	0	3
Produce was rejected by exporter	3	6	0	2.5	0	4
Prompt payment	0	0	2.5	9	3	4
Others*	0	0	10	1	3	2

*include reasons such as the buyer meets picking and transport cost, the farmer group is no longer active and trust in the buyer
Source: Household survey

4.2.2.6 Access to business services

Credit

The results show that use of credit in Kandara and Marani is generally low. For instance, 43% and 62% of the male managers and 49% and 36% of the female managers applied for credit in Kandara and Marani, respectively. Furthermore, the findings indicate that relatively fewer producers (23% in Kandara and 29% in Marani) received agricultural credit in the past one year as shown in Figure 5 and where credit is sought, producers tend to use the credit on other crop enterprises because avocado is believed to require fewer inputs than other crops like cereals, coffee and tea. Further, the results suggest that groups are the main source of agricultural credit while cooperatives such as those of coffee and tea serve as another important source of credit to farmers who are members in the respective cooperatives.

According to the findings from FGDs, women were reported to have more access to credit from financial service providers such as Kenya Women Finance Trust (KWFT) and Equity bank. This kind of credit was not only used on agricultural enterprises but also on other enterprises such as small scale businesses. Likewise, women received credit from community savings and credit schemes, specifically Rotating Savings and Credit Associations (ROSCAs) and Accumulating Savings and Credit Associations (ASCAs). ASCAs were more common in Kandara than in Marani because of their popularity within Central Kenya. On the other hand, men mainly rely on returns from crops and advances from coffee and tea in Marani or obtain inputs on credit from NGOs such as One Acre Fund in Marani. The large number of producers belonging to avocado groups in Kandara notwithstanding, access to credit seems to be limited as most of the groups do not have revolving funds scheme and hence cannot lend to the members. However, this particular credit is more likely to benefit male and female managers in female headed households since they are the registered members of the groups. On the other hand, female managers in male headed households would have to rely on the household heads who have to make decisions regarding use of the credit.

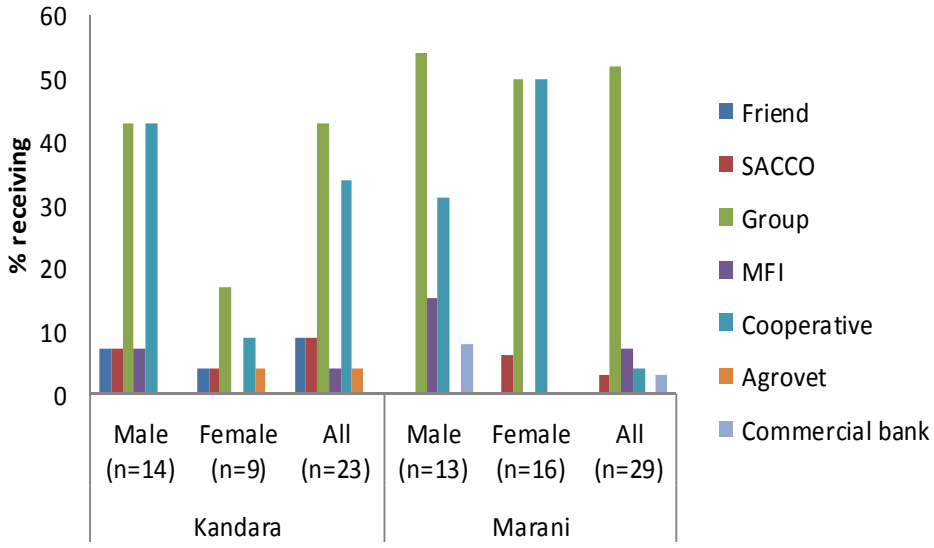

Figure 5. Proportion of Farmers Receiving Agricultural Credit, by Source and Gender of Manager

Transport

There are limited transport services in both the sites because there is no expressed demand for them. In most cases, particularly in Kandara, transactions take place at the farm gate and buyers arrange to transport their products by themselves. However, where there is need to transport the products to the market, those with small quantities of fruits carry them on their backs to collection points using baskets and sacks or use public transport where necessary. Both men and women reported that they are satisfied with the buyers' mode of obtaining produce at the farm gate. Given that the avocado value chain in Kandara is well developed and elaborate, producers cover shorter distances to the buyers than do producers in Marani. Whereas producers in Kandara travel for about 0.004 km, those in Marani cover an average of 1.5 km to reach the buyers. Similarly, while the majority of male managers in Kandara sell their produce at the farm gate, female managers cover an average of 0.01 Km in search of buyers. On the other hand, male managers in Marani travel for slightly longer distances than female managers to reach the buyers. This is because women are reported to prefer selling to consumers, particularly school children who are more often than not located near the producers' homesteads. Marketing of avocado at the farm gate is preferred because the prices offered at the markets are not able to pay for the cost of transporting the produce to the market. Owing to the big size of the fruits and the weight, women are not able to transport the fruits to the market on their backs like they do with other crops. Men in Marani develop interest in avocado marketing when it involves buyers who purchase the produce in large quantities and in some cases, selling to such buyers entails delivering the produce to their business premises such as the market centre on a market day.

Storage

Storage is not a major problem among avocado farmers because the harvested produce is usually stored in the farmers' houses or in temporary makeshifts while waiting to be sold to the buyers. In most cases, the fruits are sold on the same day they are harvested and therefore farmers do not consider storage as a priority.

Extension

The producers rely on the Ministry of Agriculture for technical advice on management of avocado as well as post-harvest handling. The women in Marani felt that extension services provided by the Ministry of Agriculture had become less accessible with time following the shift in extension approach from supply driven to demand driven. In Kandara, some buyers such as exporters provide technical advice to farmers through their field staff who are responsible for checking on the quality of the fruits as well. The advice is extended to farmers who sell to exporters through their respective groups. Other alternative sources of technical advice as mentioned by the producers include field days or demonstrations and radio. Use of mobile phones to access extension services appears to be less prevalent among the producers despite a number of them having the phones.

Harvesting

In Kandara, the cost of harvesting fruits is generally borne by the producer if the buyer is an exporter. However, brokers hire young men who harvest fruits at KES 1 per piece. Female headed households without adult males in their household might face challenges if they have to sell to exporters because they would have to bear the cost of harvesting. In this case, the women who are not able to meet the cost of harvesting are more likely to sell to brokers than to exporters. Because labour for harvesting is sometimes a constraint to women in female headed households, the quality of fruits is likely to be compromised if the women resort to hiring cheap labour who might not be specialised in harvesting and grading the fruits. In such circumstances, immature fruits might be harvested as well, resulting in high rejection rates and severe losses to the female producers. In Marani, harvesting of the fruits is done by young men who are able to climb the trees. However, the cost of harvesting is entirely born by the producers irrespective of the type of buyer. In fact, it is considered a taboo for women to climb trees in Marani, thus compelling the women in female headed households to contract labour if they do not have an adult male within the household.

Market information

Farmers obtain market information from brokers, traders and marketing officers based at the Ministry of Agriculture. Alternatively, the producers access market information from other sources such as radio and group meetings. In Kandara, for instance, farmers who belong to avocado groups obtain information on market demand from officials of AGAK. The members

are usually informed of avocado varieties that are on demand, the sizes required by the exporters and changes in market demand, although there were complaints from some members of the group concerning the level of transparency among the officials. While some group members, particularly, those that had AGAK officials as members of the group, received crucial market information, others did not. Because farmers rely on the buyers to provide them with market information, they are usually price takers and do not take part in price negotiations with the buyers. Both men and women rely on information from the buyers and use of mobile phones to obtain information on market prices is minimal among the producers.

Inputs

Producers use limited amounts of improved inputs on avocado and when these inputs are used, they are usually obtained from agrovet dealers in the nearby towns. Inputs such as fertilizer and pesticides are bought from nearby retail shops. Spraying of avocado is done by the producers themselves. However, only a few farmers spray the fruits because of the high cost of pesticides or lack of knowledge about the right pesticide and the amount to use particularly on avocados for export.

Quality Assurance

These are global standards that were set up by buyers in the international market to control for quality of produce exported from the country. Farmers in Kandara were trained on Global Gap by exporters and KBDS. The farmers practice and ensure that all the quality requirements by exporters are met. The producers who sell through the group have an experienced grader who was trained by the KBDS. The grader does grading of avocado for farmers in his group at a fee of KES 500 per day. However, those who cannot afford to hire the services of the grader do the sorting and grading by themselves or rely on brokers for the service. When sorting and grading, the graders take into consideration quality requirements imposed by the exporter such as lack of bruises, no pests and diseases, be of the recommended size and should not be over mature.

4.2.2.7 Constraints to production and marketing

Producers in Kandara and Marani have to contend with a number of production and marketing constraints. The constraints vary with the type of avocado produced and the level of development of the value chain. Tables 11 and 12 provide a summary of production and marketing constraints, respectively, as reported by farmers in Kandara and Marani. In both the sites, high incidence of pests and diseases and low prices appear to be the main constraints to avocado production and marketing, respectively. However, high incidence of pests and diseases appears to be a major constraint in Marani compared to Kandara. During key informant interviews with the extension

staff, it was indicated that farmers in Marani tend to confuse flower abortion, which is caused by poor nutrition, with diseases. This could perhaps explain the high proportion of producers that is reporting pests and disease incidence as a constraint. In Marani, it was observed that farmers leave the fruits untended and only wait for harvesting time. In Kandara, however, high incidence of pests and diseases is attributed to failure by the producers to spray the trees as required, which could be due to the size of the trees as well as lack of knowledge on the type of pesticides and the right amount to use given the stringent food safety standards in the export market. For instance, some buyers insist on buying organic avocado to process into virgin avocado oil because the buyers in the international market are keen on pesticide residues, yet the producers lack knowledge of organic pesticides. To overcome this challenge, interlinked services such as spraying could be provided by the buyers and the costs recovered from the produce upon delivery. Although there was an attempt to provide spraying services by buyers such as EAG and Ideal Matunda, challenges such as side-selling by farmers and blanket deductions being made by the companies, which affected groups that did not benefit from the service saw the arrangement collapse. Currently, Ideal Matunda provides a similar service to the farmer groups that it buys from because the company believes that motorised spraying is the only effective way of spraying avocado trees, yet farmers cannot afford such sprayers. Ideal Matunda provides the service to its contracted farmers, who are mainly in Gatanga, at KES 55 per tree and the recovery rate is reported to be high because of trust and customer loyalty. To the extent that about 13% of the producers in Kandara indicated that high cost of inputs is a constraint, interlinked credit is likely to enhance the producers' access to the recommended pesticides.

Low price of avocado, which is attributed to low demand in Marani or disorganised markets in Kandara, appears to be a major concern to the majority of the producers. In Kandara, the producers have access to several marketing channels including exporters, brokers, processors, retailers and wholesale traders, yet the majority tend to prefer selling to brokers who offer relatively lower prices than exporters and processors. Although individual producers may not have direct linkage with the exporters unless through farmer groups, the results suggest that selling to exporters is shunned by the producers because of delayed payments, unclear terms of the contract including grading and prices of the produce and failure by the exporter to meet the cost of picking and grading. Whereas brokers grade and decide on the prices at the farm gate, the exporters provide information on the prices and grades after receiving and transporting the produce to their premises, which creates mistrust among group members, AGAK officials and the exporter. The exporting company sometimes delays to collect the produce from the farmers, resulting in over maturity and loss of export value. Consequently, the exporter makes the producers vulnerable to exploitation by the brokers because of lack of alternative markets. The over mature produce fetch poor prices because they are no longer suitable for the export market due to high oil content, which predisposes the fruits to spoilage during shipping.

In Marani, low prices are entirely due to low demand for the variety cultivated. The local variety appears to have limited market channels as the producers rely on consumers and retailers. The possibility of selling the fruits in different towns is limited by lack of transport and competition

from avocado produced in those particular towns. The variety is reported to be on high demand when there is scarcity of avocado in the whole country. During this period, it is usually difficult to find fruits in the main avocado producing areas and large scale traders travel from as far as Nairobi to buy fruits from the farms. Similarly, the low demand is exacerbated by the limited value addition options since the variety is not suitable for processing into juices and oil as is common with Fuerte and Hass. Consequently, interventions geared towards improving prices in the two sites will differ. In Kandara, interventions such as reducing information asymmetry regarding the terms and conditions of the contract, instant payments and provision of interlinked services such as spraying, picking, grading and transportation are likely to improve cohesiveness of the groups and the quality of the fruits, thereby reducing the producers' vulnerability to exploitation. On the other hand, producers in Marani would need to adopt varieties than can be processed into different products to expand their market options. Thus, sensitizing the farmers on availability of improved avocado varieties as well as training them on good agricultural practices may improve the prices. The existence of private nurseries that graft seedlings of Fuerte and Hass is an opportunity that can be exploited by the producers in Marani.

Table 11. Constraints to Avocado Production in Kandara and Marani, by Gender of the Manager

	Kandara			Marani		
	Male (n=49)	Female (n=51)	All (n=100)	Male (n=42)	Female (n=58)	All (n=100)
None	8	10	6	29	38	34
lack of clean planting materials	2	2	2	0	0	0
Unfavourable weather	20	6	13	10	5	7
Lack of agronomic advice	4	8	6	21	9	14
High input costs	12	14	13	0	0	0
High incidence of pests and diseases	28	24	26	57	53	55
Lack of agronomic management skills	6	8	7	0	3	2
Fruit/flower abortion	2	4	3	10	13	12
Theft of avocado	4	0	2	2	2	2
High cost of labour	2	2	2	0	2	2
Lack of proper storage facility	0	0	0	2	0	1

Source: Household survey

Table 12. Constraints to Avocado Marketing in Kandara and Marani, by Gender of the Manager

	Kandara			Marani		
	Male (n=49)	Female (n=51)	All (n=100)	Male (n=42)	Female (n=58)	All (n=100)
None	20	10	16	21	17	19

Low demand	4	13	10	21	40	32
Low prices	73	62	72	60	69	65
Unfavourable contractual arrangements	18	1	10	0	0	0
Delayed payment by the buyer	2	5	4	0	0	0
High rejection rates by the buyer	0	5	3	0	0	0
Exploitation by buyers (use of extended bags)	2	0	1	0	0	0
High cost of transport	0	0	0	12	9	10
Lack organised market for avocado	0	0	0	7	5	4
Post-harvest losses	0	0	0	0	0	1

Source: Household survey

An in-depth analysis of the variation in constraints by gender of the person responsible for avocado reveals that there is no major variation in the type of constraints faced by male and female managers. In Marani, however, more men than women managers report lack of agronomic advice as a constraint, which could be a reflection of their low level of involvement in the production of the crop. Although the producers in Marani decried the disappearance of the extension personnel and their diminishing importance in providing technical advice especially on avocado, it is highly likely that more women than men managers are seeking out extension services on avocado because they depend on them for food and income. In Kandara, more female than male managers, particularly those selling through groups, face constraints related to picking and grading because the buyer does not provide such services. Consequently, more female than male managers tend to sell to brokers who provide such services in addition to instant payments.

4.2.3 Traders

There are two types of traders in the avocado value chain namely small and large scale traders who deal in more than one commodity, probably as a risk management strategy. The traders are classified based on the volume of sales and the quantities they purchase as well as the type of customers they handle. In the export avocado value chain, for example, the large traders generally handle large volumes of merchandise and transport them in large trucks unlike small traders who buy in small quantities and use small trucks or pick-ups to transport the merchandise. Large traders buy avocado mainly from individual farmers and sell them to exporters, processors, and other traders while small traders target the domestic market where they sell avocado mainly to other retail traders and consumers. Some of the avocados are sold to supermarkets in Nairobi and other major towns, although this market channel was not explored. The traders interviewed in Kandara sold the avocado to exporters such as Vegpro, KHE, EAG and Sunripe. Traders selling to exporters generally deal in larger volumes of about 107267 and 86960 pieces of Fuerte and Hass avocado per month as shown in Table 13. On the other hand, those selling to other traders stock fewer pieces of about 18065 and 7017 pieces of Fuerte and Hass respectively.

Table 13. Volumes Sold per Month and Gross Margins for Traders in Kandara, by Marketing channel

	Exporter		Processor (n=1)	Secondary Trader	
	Fuerte (n=4)	Hass (n=4)		Fuerte (n=7)	Hass (n=2)
Volume	107267	86960	-	18065	7017
Buying price	2.75	4.00	0.75	2.05	1.50
Selling price	5.60	8.00	2.50	3.60	2.20
Costs	4.50	5.70	2.50	2.70	2.30
Gross margins	1.15	2.30	0.00	0.90	-0.10

*Prices, costs and gross margins are in KES per fruit
Source: Key informant survey

The prices at which the traders buy and sell avocado vary by marketing channel. For instance, traders dealing in export avocado pay higher prices to the suppliers than those selling to traders and processors because the avocado destined for export market is generally considered to be of premium grade and hence fetch premium prices. Similarly, gross margins are higher if traders sell to exporters than if they sell to other buyers such as processors and secondary traders. Cost components of gross margins for traders are shown in Figure 6. The figure suggests that the cost of purchasing avocado accounts for the highest component of gross margins.

The traders bulk the fruits and sell them to traders who are based in other towns such as Garissa, Thika, Mwingi, Kitui, Mwala and Nairobi. According to the findings from the FGDs, the local

market in Kandara relies on rejected avocado while high quality avocado is sold to the export market or domestic markets outside the district.

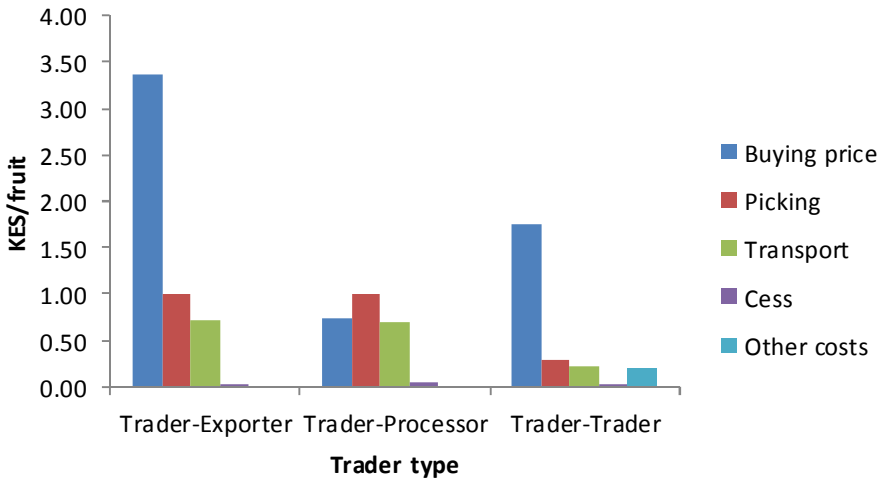

Figure 6.Cost Components of Gross Margins for Traders in Kandara, by Trader Type

Based on the traders interviewed, selling to exporters is dominated by male traders while those selling to secondary traders are entirely female, with the exception of one out of the seven traders interviewed. The question that needs to be addressed is why women traders seem to be concentrated in the domestic market while male traders dominate the export market. Thus, it appears that gaining access to the export market may have special requirements that women are not able to meet. Alternatively, there could be barriers to entry for women in the export market, which makes them focus on the domestic market. For instance, venturing into large scale avocado trading requires transport facilities and capital, which women may lack. Furthermore, bulking of the fruits could be physically demanding for women since it requires moving to several farms in search of the produce. Apart from sex of the traders, it was observed that traders supplying avocado to exporters are generally youthful, energetic, well informed and educated.

The traders, irrespective of the buyer they sell to, do not have contractual arrangements, but they have long standing relationships with their buyers, which has been established through trust and repeated transactions. Consequently, the majority of the traders buy avocado from individual farmers while a few buy from brokers and other traders. Only one trader in Kandara reported that he buys from farmer groups. Where suppliers are individual farmers, they are more likely to be male than female, indicating the predominance of male producers in the export avocado value chain. Most of the avocado fruits are sourced from Kandara, but a few traders purchase avocado

from Meru, Nyeri, Murang'a, Kiambu, Gatanga, Kangema and Nakuru. Meru and Nakuru are important sources of avocado during off-season in Kandara.

In general, the traders do not provide any business support services to their customers. However, a few of them occasionally train suppliers on good agricultural practices and offer advance payments to suppliers only after building long standing relationships with them. Other services such as transport, picking, spraying and post-harvest handling are the responsibility of the supplier. Traders selling to exporters consider attributes such as less physical damage due to bruises or sun-burn, disease free fruits, conformity to the required size by the buyers, mature but not overripe fruits. Pesticide residue is one of the requirements that is imposed to the exporters by the EU consumers and is sometimes checked by the traders. However, traders selling to processors are less concerned about the size, but the fruits have to conform to all the quality requirements imposed by the exporters. The processors need fruits that are more mature than those required by exporters, but the fruits do not have to be overripe because they can be easily damaged during sorting and transportation to the processing plant. On the other hand, traders selling to secondary traders pay little attention to quality attributes. Instead, they are usually concerned about the maturity of the fruits and require that the fruits be nearing ripening but should be hard enough to withstand handling without breaking during transportation.

In Marani, there are traders who buy and sell avocado locally while there are those who do cross-border trade, particularly in the border towns of Kenya and Tanzania. The traders do not specialise in one commodity but sell a variety of fruits including avocado. In both cases, female traders tend to dominate the chain. Of the seven traders interviewed, one was male while the rest were female. Three of the traders sell to traders locally and at the border towns while two sell to consumers in Kisii and two purchase avocados from traders in Kisii and sell to consumers in Kisumu. Overall, women tend to dominate the chain for local variety, because trading in local avocado requires sitting at the market to sell the produce, which is seen by men to be time consuming. The main suppliers of avocado to the traders in Marani are individual farmers, brokers and other traders. Suppliers are reported to be mainly female, whereas a few men participate in the chain only if the deliveries involve large quantities and hence large sums of money. As shown in Table 14, traders selling to secondary traders locally and at the border towns handle relatively large volumes of avocado in a month compared to those selling to consumers. Likewise, purchase prices vary widely depending on the size, but traders selling to consumers fetch higher returns than those selling to traders. However, relying on consumers appears to be more risky than selling to traders because the marketing channel is less predictable since consumers buy in small quantities. Figure 7 shows cost components of gross margins for traders selling to various market channels. According to the figure, purchase costs account for the highest component of gross margins for traders selling in Kisii and Tanzania while marketing costs account for the highest cost components for traders selling in Kisumu. Transport is low for traders selling in Kisumu because they rely on traders who purchase and send them avocado through public transport. As such, they do not need to travel to Marani for the produce.

Table 14. Volumes sold per Month and Gross Margins for Traders in Marani, by Marketing Channel

	Trader (n=3)	Consumer	
		Kisii (n=2)	Kisumu (n=2)
Volume	8667	4260	400
Buying price	3.90	4.50	2.10
Selling price	7.50	10.50	12.50
Costs	5.60	6.60	7.60
Gross margin	1.90	3.90	4.90

*Prices, costs and gross margins are in KES per fruit
Source: Key informant interview

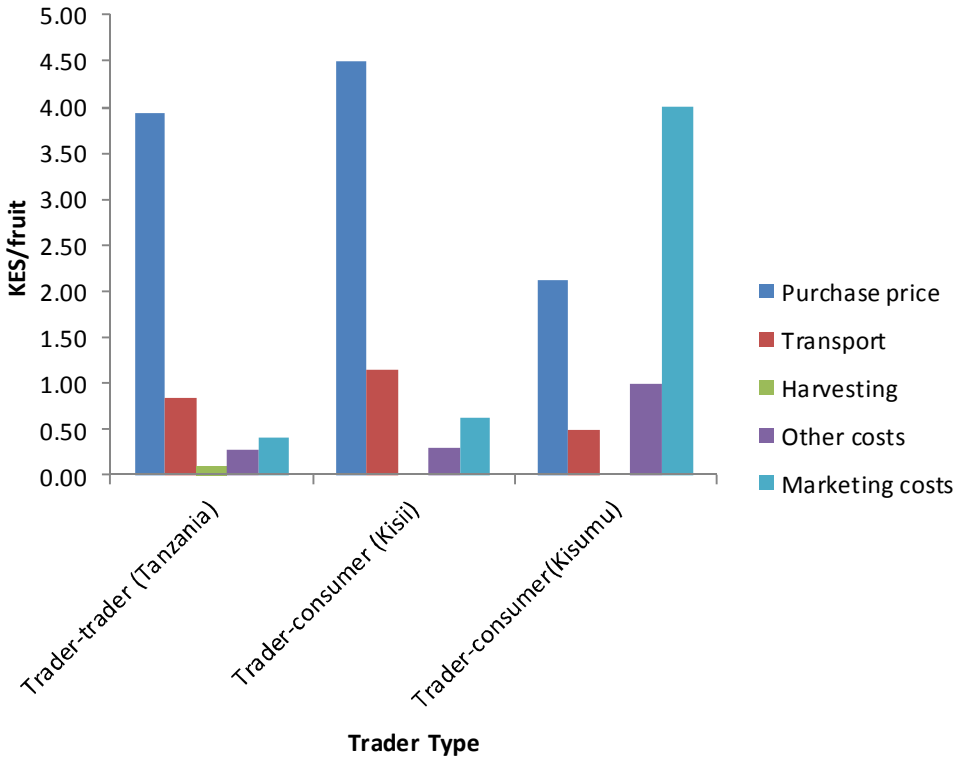

Figure 7. Cost Components of Gross Margin for Traders in Marani, by Trader Type

Like in the export value chain, market arrangements are not evident and spot market transactions are more common than contractual arrangements. Where market arrangements between the traders and the buyers exist, they are generally informal and are based on trust that has been gained through long standing relationships among the actors. These customer relationships are said to be important because they assure the traders of sustained supply even during lean periods (periods of scarcity). In addition, the traders have built trust in the quality of fruits supplied by

the buyers with whom they have had repeated transactions. The traders in Marani provide limited support services such as advance payment to their trusted suppliers while the rest of the services are taken care of by the supplier.

The attributes considered by the buyers of local avocado include texture, shape and size. Overall, big fruits that are rough in texture and green in colour when ripe are preferred by the traders because they are highly demanded by the customers. This type of avocado is preferred because it has a creamy taste when ripened and can be easily eaten with other food items like vegetables and bread among others as an accompaniment. Besides, the fruits should be free from diseases and physical damage such as bruises and sun burn, and should not be overripe at the time of sale. Unlike in the export avocado value chain, limited attention is paid to pesticide residues in the local avocado chain.

According to the traders in Kandara and Kisii, there is enormous potential in the avocado business that can be exploited to benefit the chain actors. For example, Kenya has suitable climatic conditions for producing avocado when its competitors are off-season yet Kenya is not able to meet the current demand for Hass. The demand for avocado is increasing both locally and internationally following an increase in the level of awareness among consumers of the nutritional benefits of avocado. In addition, there is unexploited potential in the processing end of the chain because of shortage of supply of the preferred variety, particularly Hass. This channel can be explored by the traders in Kandara that are already dealing in the two varieties.

Despite the aforementioned opportunities, however, traders in Kandara and Kisii face a number of challenges that are likely to limit their potential to exploit the existing opportunities. First, the stringent quality standards imposed by exporters reduce the traders' profit margins, because rejection rates are usually high resulting in massive losses. Furthermore, the poor road network to the farmers' fields coupled with inadequate post-harvest handling techniques and storage facilities result in spoilage and physical damage of the fruits during transportation. The quality of fruits is reported to be deteriorating in both the sites because of premature harvesting as farmers try to cash in on high prices at the beginning of the harvesting season. As such, the traders cannot be certain about the prices of the fruits delivered to the buyer until the fruits are sorted and graded. Likewise, prices fluctuate and are generally low during peak seasons because of glut in the domestic and export markets. In the domestic markets, there are barriers to entry into certain markets because of cartels by brokers. These cartels increase the cost of doing business and limit the traders' potential to exploit lucrative markets.

4.2.4 Processors

The avocado value chain is dominated by a few large and well established processing companies. Although the exact number is not known, three companies process avocado into crude oil that is sold for further refining and processing in Europe, South Africa and the USA. One of the companies is currently refining avocado oil locally into virgin avocado oil and exporting it to the

parent company in New Zealand. Of the three processors interviewed, two could be categorised as large scale processors and the other one as medium scale processor.

Oil processors provide a growing market opportunity for grade 2 avocados which are not suitable for export or sale in the domestic fresh fruit market. The processors buy avocados that have been rejected by the exporters as over mature or physically damaged. One of the processors interviewed buy avocado from farmer groups while the remaining two buy from individual farmers, brokers and traders. In the processing firms, men tend to dominate management positions and where the business is under sole proprietorship, men are usually the main owners. Like in the supply of germplasm women perform tasks such as sorting, grading, labelling while men operate machines and move heavy loads. The majority of the suppliers of avocado are men, with a few women venturing into the business particularly those who join groups after the death of their husbands. The two processors who buy from farmer groups and individual farmers have established long standing relationships with the suppliers through formal contractual arrangements. Thus, the transaction is bound by a contract that spells out what is required of the suppliers and the processors. One of the processors produces speciality product from avocado e.g. organic avocado oil and thus believes that contractual arrangement with individual farmers makes it possible to meet quality standards that are required by consumers in the export market. According to the key informant, it is easier to enforce quality standards when dealing with individual farmers than it is when dealing with farmer groups because individual contracts eliminate free rider problem that compromises the quality of produce delivered. The two processors with formal market arrangements with the suppliers prefer this kind of arrangement because it assures them of continued supply to maintain capacity utilisation. In addition, contracting of individual farmers or groups reduces the cost of bulking since the suppliers usually have a designated collection point for bulking the produce. On the other hand, the processor who buys from traders and brokers does not have any formal contract with the suppliers, but buys from any supplier who delivers the produce to the business premises as long as the produce meets the required quality standards. This processor prefers to not enter into formal contracts with the suppliers and particularly farmer groups because the produce delivered by groups tends to be of poor quality owing to the free rider problem. Owing to lack of contractual arrangements and close customer relations with the suppliers, the processor does not provide any business support services to its suppliers and most of the transactions are conducted on spot market. Indeed, the processor is vertically integrated and produces avocado for fresh export market and the remaining fruits that are not suitable for export are processed into crude oil. Perhaps this explains why the processor is not worried about maintaining the supply base since the firm is assured of continued supply from its own farm. On the other hand, the groups and individual farmers contracted by the two processors benefit from training on certification, transport from designated collection points on the farm to the factory, technical advice on post-harvest handling, advance payment and packaging materials.

The main quality attributes considered by suppliers when sourcing for fruits include maturity (the fruits should be mature but not overripe), pesticide residue levels, fatty acid levels. For those processing organic avocado oil, the producer should employ organic methods.

According to the processors, there is unmet demand for processed avocado oil both locally and internationally. Nearly 99% of the processed avocado oil is exported while the domestic market absorbs the remaining one percent. The demand for extra virgin avocado oil has not developed locally because the product is thought to be too expensive to compete with other types of oils. Nevertheless, following consumers' shifts in preferences for organic products, the demand is predicted to rise. Yet the quantities available on the market are less likely to meet the demand given the limited supply of raw materials (fruits). The processors face stiff competition from exporters for fresh fruits because producers prefer to sell their fruits to those who export fresh fruits, because the returns are thought to be higher than when the fruits are sold to processors. For instance, farmers obtain gross margins of KES 1.45 if they sell Fuerte to processors compared to KES 1.85 when they sell to exporters. Processors, therefore, rely on grade 2 which has been rejected by the exporters. Hass variety, which has high oil content, is hardly available to the processors because most of the fruit is exported as fresh fruits. However, the results suggest that avocado processing is likely to be a profitable venture if the companies were able to operate throughout the year. A rough estimate of the gross margins for one of the processing companies indicates that the gross margin is positive and higher than that obtained from exporting one fruit of avocado. For instance, exporting one avocado fruit gives gross margins of KES 5.90 and 5.95 for Fuerte and Hass respectively while one processed avocado fruit gives gross margins of KES 15.40 and 19.90 for Fuerte and Hass respectively.

Processors face constraints such as stringent quality standards in the export market such as fatty acid levels and pesticide residue levels for extra virgin avocado oil. These standards increase the cost of doing business because theprocessors have to put in extra costs to monitor the quality of fruits produced by the contracted farmers. In addition, the seasonality in the production of avocado is a major problem because the companies operate below capacity during off-peak seasons and are forced to close down but still pay fixed costs. Likewise, high cost of production because of high freight and electricity charges is another factor that might limit the processors' ability to exploit the existing opportunity.

4.2.5 Exporters

The avocado export industry consists of small to medium scale and large scale exporters. While the number of large exporters such as Kakuzi Limited, East African Growers, Sunripe, Vegpro and Kenya Horticultural Exporters (KHE) has remained constant over the past years, the industry has recorded an upward trend in the number of small to medium scale avocado exporters joining the industry. Some of the small to medium scale exporters include Keitt exporters, Ideal

Matunda, Nice exporters, Sabeen Limited, Hillside exporters, and Kadia exporters among others. On average, the medium scale companies started the exporting business less than 10 years ago while the established companies have been in the exporting business for over two decades. Four of the five companies interviewed have worked with avocado farmers and farmer groups in Kandara at different points in time. For instance, Ideal Matunda through its consulting arm, Ideal Business Link linked farmers groups in Kandara to exporting companies such as EAG, KHE and Kakuzi Ltd, facilitated the farmers' access to credit from Equity Bank and provided spraying and bulking services. The contractual arrangement between the groups and the exporting companies collapsed because the farmers could not supply sufficient quantities to guarantee returns due to side-selling by some group members. Nevertheless, Vegpro is currently buying avocado from the farmer groups after being linked to the groups by the Avocado Growers Association in 2009.

Whereas all the exporting companies diversify their export portfolio to minimise business risks, the level of diversification tends to be higher among the more established or large scale companies. For instance, the large scale companies export vegetables in addition to fruits such as avocado and mango and some of them export products other than horticultural products such as tea, coffee and livestock products. On the other hand, the medium scale companies either specialise in one particular product such as avocado or venture into exporting other fruit products as well, mainly mango. One of the medium scale companies has diversified along the avocado value chain by assuming the processing function in addition to exporting fresh fruits (vertical integration). Among the companies that export a variety of products, avocado accounts for the smallest proportion of the produce exported because it is considered as a cheap commodity. In this case, priority is usually given to flowers that can be easily transported by air since they offer higher returns to the exporters and the airlines.

The exporting companies generally purchase and sell an average of 148,000 cartons or 592 tonnes of avocado in a month, although the quantity varies by the scale of operation. Large scale exports handle larger volumes of about 191,000 cartons or 764 tonnes, which is twice as much as that handled by medium scale exporters. The large scale exporters have competitive advantage over the small to medium scale exporters in terms of cost and hence are able to compete by offering higher prices to the suppliers. Furthermore, large scale exporters like Kakuzi Limited are vertically integrated and hence they control the quality of avocado exported and build customer brand loyalty. Although it was difficult to establish the exact costs incurred by the exporters, a rough estimate of the returns indicate that the exporters create a positive value as the product moves from the producers to traders and finally to the consumer. For instance, the exporters derive an average gross margin of KES 4.00 and KES 5.90 from Hass and Fuerte respectively while the gross margins vary from KES -2.00 to KES 9.50 for Fuerte and KEs 2.70 to KES 8.60 for Hass depending on the exporter and the destination. While the producers report that they sold the fruits at KES 1 per piece, the prices reported by the exporters appear to be higher than what was reported by the producers. As shown in Figure 11, the average purchase prices per fruit reported by the exporters are KES 5.70 and KES 6.90 for Hass and Fuerte respectively, but the prices range from KES 4.60 to KES 10.50 and KES 3.75 to KES 7.40 for

Hass and Fuerte, respectively. Apart from purchase costs, transport cost accounts for the largest share of gross margins for medium scale exporters. Because medium scale exporters generally specialise in one line of product, transportation costs are likely to be high.

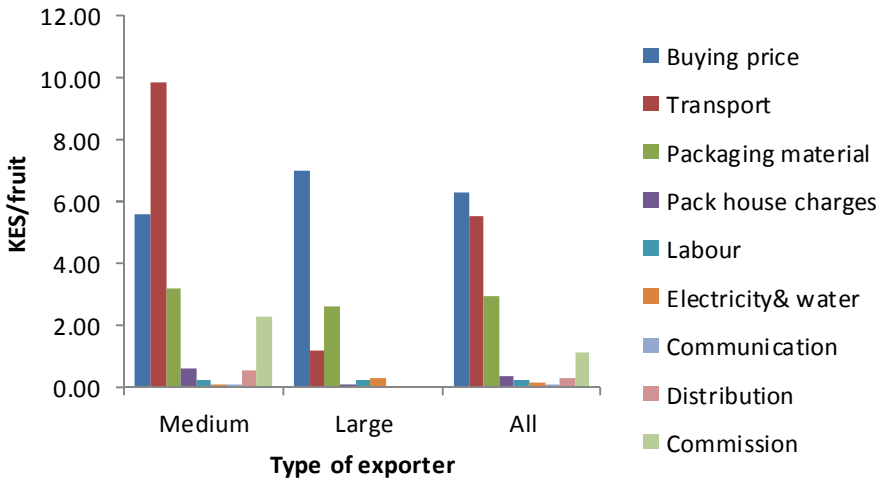

Figure 8. Cost Components of Gross Margins for Exporters, by Type of Exporter

Nearly all the companies prefer Hass variety but the majority of the companies export about 80% of Fuerte and 20% of Hass because Fuerte is readily available compared to Hass, which was recently introduced in Kenya in the early 1970s. Only one of the exporting firms exports a large proportion of Hass compared to Fuerte because the company produces its own Hass. The majority of the fruits are destined for the EU market and are sold to distributors who sell them to supermarkets. Middle East countries like the United Arabs Emirates, Bahrain and Saudia Arabia are increasingly becoming important export destinations for the Fuerte variety. France is the most preferred destination for avocado exports to the EU market because it is closer to Africa and the docking port. As a result, France acts as a distribution point to countries such as the Netherlands, Germany, Spain and other Scandinavian countries. Similarly, France is preferred because it has less stringent rules on quality standards than do countries like the United Kingdom. For instance, to export to the UK, one is required to meet other certification standards in addition to the British Retail Consortium (BRC) global standards, which need repackaging of the fruits according to the BRC standards. Avocado fruits destined for the export market need to meet strict quality requirements, which include physical attributes like lack of blemishes due to sun burn and damage during harvesting or transportation, be of the required size of between 14 and 22, have low fatty acid content to ensure long shelf life during shipping and minimum pesticide residue levels.

Overall the exporting companies buy avocado from farmer groups, individual farmers and brokers and most of the suppliers come from Central and sometimes Eastern Kenya. Most of the avocado is sourced from districts within Murang'a County such as Kandara, Gatundu, Gatanga and other regions like Nyeri, Kirinyanga, Thika and Kiambu. However, during off-peak avocado is sourced from Meru and Embu, which have different harvesting periods from the regions in Murang'a. The suppliers are predominately male irrespective of whether they are brokers or farmers, which could be attributed to the fact that men own resources used for producing avocado such as land and are the registered members of the farmer groups. On the other hand, brokers are mainly men because supplying of the produce to the exporters requires time and resources for bulking, inspecting and transporting fruits to the exporter's business premises. Two of the exporting companies preferred to purchase avocado from brokers because they do not have to incur transaction costs associated with searching for the produce, bulking and transportation. While one of the exporters had a formal contract with the brokers, the other exporter preferred to engage in non-contractual transactions and in both cases, the brokers do not benefit from any business support services. On the other hand, the exporters that buy from individual farmers and farmer groups have formal contracts with the suppliers or the groups. Although these exporters enter into contracts with individual farmers, they prefer to work with farmer groups to ensure economies of scale and reduce bulking costs. Besides, it is cost effective to provide the farmer groups with business development services such as training on certification standards or good agricultural practices, application for traceability certificates, provision of transport and technical advice on post-harvest handling. To reduce transaction costs, individual farmers who wish to enter into a contract with the exporters must have a minimum of 300 trees or supply at least 450 to 1000 cartons of avocado. Consequently, most of the individual farmers who supply avocado to the exporters are more often than not medium to large scale farmers.

In the majority of the cases, the contract is usually between the exporter and the suppliers or groups, with the exception of one exporting company called Vegpro, which has a tripartite contract with officials of the farmers groups, AGAK. The officials of the groups sign the contract on behalf of their members while AGAK coordinates farmer groups and links them with the buyer. The contract was initiated by AGAK on behalf of the farmers groups. The HCDA acts as an arbitrator in case of breach of contract and hence witnesses the signing of the contracts between the exporters and the suppliers. Despite the exporters' signing a formal contract with the suppliers, cases of breach of the contract either by the exporter or the supplier are common. The breach of contract occurs due to circumstances beyond the control of both parties. For instance, the farmers may engage in side-selling when the export company fails to collect the produce within the agreed period because of changes in the demand in the international market. In order to maintain customer loyalty, some exporters such as Ideal Matunda, link their suppliers with other buyers if the company is not able to buy all the fruits produced by the farmer groups. However, the exporters prefer contractual arrangements with the suppliers because they can regulate the quality of the fruits through training and provision of technical advice, monitor the

suppliers' adherence to quality standards, reduce post-harvest losses by providing appropriate packaging materials and ensure reliable supply of the fruits.

Services

One of the exporters provides spraying services to its contracted suppliers in Gatanga at a cost of KES 55 per tree and recovers charges from the farmers' produce. These services are meant to make the suppliers remain loyal to the exporter. In most cases, the buyer exerts bargaining power since the farmers rely entirely on the spraying services offered by the buyer. The trees are fully grown and can only be sprayed using motorised sprayers.

The exporters provide transport to contracted farmer groups from the bulking or collection point to the warehouse while individual suppliers such as brokers are expected to meet the cost of transport from the farm gate to the warehouse or factory.

Technical advice is another service that is offered by the exporter through their technical officers who visit and train contracted farmers on good agricultural practices (GAP) and certification standards. In some cases, the exporters organise for the farmer groups to obtain traceability certificates as is done by Vegpro.

Where incidences of moral hazards appear to be limited as in the case of suppliers who have transacted with the buyer for a period long enough to build trust amongst each other, advance payment or interlinked credit is sometimes provided by the exporter, but this happens on rare occasions.

The contracted suppliers, who are mainly producers, are provided with packaging materials by the exporter to minimise damage to the fruits and reduce rejection rates, which are reported to be common when the suppliers use their own packaging material.

To a limited extent, some exporters train their suppliers who include farmers and brokers on harvesting, sorting and grading to regulate the quality of the fruits and minimise losses. In most cases, however, these services are provided at a fee by people who were trained by KBDS.

Trends

According to the exporters, the trend in avocado export business can be described to be increasing because of a reduction in post-harvest losses following technological advances in avocado processing for exports, such as grading and sorting using machines. Consequently, the exporters have been able to supply quality products, remain in close contact with the buyers and maintain customer brand loyalty. Other reasons for the increasing trend in avocado exports include consistency in the quality of avocado exported hence an assurance of customer loyalty abroad. Quality has been maintained by contracting and training farmers on good agricultural

practices or vertical integration as in the case of Kakuzi Ltd. Some of the exporting companies such as Ideal Matunda and Vegpro have technical staff in the field who oversee the production and processing of avocado for export, thus reducing post-harvest losses due to poor handling and pre-mature harvesting. Likewise, the companies attribute the growth in avocado exports to the growing demand in the export market and the increase in supply of Hass by the farmers following an upsurge in the uptake of the variety in many parts of central Kenya. Yet some companies such as Vegpro attribute the observed trend to their **competitive pricing** strategy. The company offers better prices to buyers in the international market and suppliers, hence maintaining its market share while ensuring stable and continuous supply of high quality fruits.

Challenges

The increasing trend notwithstanding, the exporters have experienced a number of challenges which are likely to negate the benefits associated with the unexploited opportunities. Such challenges include:

Increase in operational costs due to high freight charges occasioned by energy crisis and the weakening of the Kenyan shilling against hard currencies.

Inadequate supply: The European market, the main destination for avocado produced in Kenya, requires Hass variety (90%) yet most farmers produce Fuerte. However, this challenge is likely to be overcome because most farmers are being encouraged through their respective groups to top work their trees from Fuerte to Hass.

Deterioration in the quality of fruits: The fruits produced by most farmers are not able to meet quality requirements imposed by the buyers in the European market. While the buyers require between sizes 14 and 20, most farmers produce small sizes such as 22, 26 up to 30. These small sizes are in most cases rejected or purchased at very low prices resulting in losses being incurred by the exporters. Besides, such small sized fruits are not able to compete with fruits from South America. Deterioration in the quality of fruits has been attributed to lack of irrigation facilities, poor soil fertility management and the influx of inexperienced brokers-cum-exporters who do not understand the terms and conditions regarding quality standards in the export markets. The small sized fruits are usually sold to brokers who do not understand the quality requirements. When such fruits get to the international market, they erode customer brand loyalty for fruits from Kenya. Lately, the general perception has been that fruits from Kenya are small sized and immature, which has tarnished Kenya's reputation in the international market, thus compelling the established companies to engage in aggressive promotion to redeem their reputation. The groups that have been trained by Ideal Matunda on grading and sorting are reported to sell the right sizes, thus indicating that training should be extended to non-group members in order to benefit all actors along the chain.

Strategies need to be put in place by the government through HCDA to provide reliable information to the farmers on what the market wants so that they can produce what to sell rather than try to sell what they have produced. Besides, the export industry needs to be regulated to control the quality of fruits exported by ensuring that the exporters adhere to the quality standards. This role is currently being undertaken by Fresh Produce Exporters Association of Kenya (FPEAK), but it appears that the association needs strengthening to enforce the policies.

High incidence of pests and diseases: Fuerte variety is reported to be susceptible to pests and diseases, thus lowering its marketability since some buyers require pesticide free fruits or recommend use of particular pesticides which may be costly to the farmers. Hass is reported to be slightly tolerant to pests and diseases and can easily conceal bruises, which explains why it is preferred by exporters and buyers.

Stringent quality standards: Requirements on quality standards have become more stringent than they used to be sometimes back, as consumers become increasingly aware of food safety standards. This is particularly so with regards to certification standards such as **Global Gap, which is required by the importing companies.** Yet, individual farmers are not able to meet the cost of certification. Certification entails considering the acreage in addition to other costs such as documentation, structures on the ground (inspectors) and auditing costs. The company certifying the farmers comes from Europe (UK).

Poor infrastructure: The poor road network makes it difficult for the buyers to access fruits during the rainy season. The problem is exacerbated by the fact that fruits mature during the rainy season. Failure to collect the fruits at the required time results in spoilage since producers lack proper storage facilities.

High cost of bulking: Lack of collection or bulking centres increases procurement costs. The majority of the farmers have few trees, which are not sufficient to produce the required quantities, thus necessitating the buying companies to incur high bulking costs in the absence of collection centres.

Shipping logistics: Delay in processing shipping documents results in post-harvest losses since the fruits reach the destination when the oil content is higher than the recommended level.

4.3 Women's Participation in the Stages of the Avocado Value Chain

Table 15 provides synthesised findings on women's involvement in the different stages of avocado value chain in Kandara and Marani. The findings suggest that where the value chain is less developed like in Marani, there is no major variation in the proportion of men and women participating in the stages of the value chain. Because marketing of avocado in Marani is confined to nearby markets and small scale traders who buy the fruits at the farm gate and transport them to the markets, the fruits are sold at very low prices or in small quantities, which makes the returns less attractive to men who rely on returns from coffee and tea. In this case, women, just like men, appear to be fully integrated in most of the stages of the avocado value chain. Occasionally, avocado from Marani is sold on a large scale to traders who transport the produce to Tanzania and Nairobi. Under this circumstance, men get interested in the proceeds since the returns are thought to be sufficiently large. Consequently, men get involved in making decisions on the sales and women in male headed households have to consult their husbands on how to use the proceeds from such sales.

In Kandara, however, where the market chain for avocado is well developed and elaborate, the returns are high making the enterprise more attractive to men**.** On the whole, in the export avocado value chain, men are concentrated in high status, more physical, more remunerative activities along the chain while women predominate as wage labourers in private nurseries, processing firms and export companies. Women workers are generally segregated in certain nodes of the chain (e.g. grafting, processing and packaging) that require relatively unskilled labour, are routine and also require keenness and patience. This is a reflection of cultural stereotypes on gender roles and abilities. For instance, women working in Aberdare Technologies, a private nursery in Murang'a County, are involved in grafting, sorting the seeds and planting seedlings. These activities require less physical energy but are time consuming and low paying. Men, on the other hand, are involved in carrying sand, manure and other inputs and land preparation which are labour intensive, take a short time and are better paying. These findings corroborate those of Baden, 1998; World Bank, 2003; Dolan and Sutherland 2002, Meartens and Swinnen 2009, in which the majority of women were found to be concentrated in the lower end of the chain and perform unskilled manual labour in high value agricultural value chains.

At the household level, women tend to be fully involved in the production and more women than men manage avocado fields. However, more men than women in male headed households tend to be involved in decision making on where and when to sell avocado of premium quality and joint decision making is prevalent when the avocado is of inferior grade such as grade 2 and grade 0. This explains why more men than women in male headed households sell to exporters. Consequently, the results suggest that interventions geared towards enhancing the participation of women in the different stages of avocado value chain at the household level will differ for the different categories of women, and will depend on the degree of commercial orientation of the produce. For instance, women in female headed households who are in most cases widowed

automatically assume the role of the household head and hence have access to and control of productive resources. This particular group of women can make decisions regarding production, marketing and use of the proceeds from avocado. Besides, this category of women is eligible to become a member of the avocado farmers group since they can assume ownership of the trees after the death of the husband. As such, integrating widowed women into the agricultural commodity markets, especially in the male dominated enterprises may only require alleviating constraints that limit their participation in such markets, such as financial constraints. As observed from the findings, women in female headed households who belong to groups tend to sell their produce to brokers despite having access to exporters because brokers offer instant payments in addition to meeting the cost of harvesting and grading. Therefore, strategies that aim at alleviating financial constraints such as linking this category of women to financial service providers is likely to facilitate their integration into the export avocado value chain.

On the other hand, women in male headed households whose husbands engage in other more lucrative activities may require a different approach to integrate them into the key stages of the value chain, particularly with regards to participation in export marketing and decision making on how to use proceeds from avocado. Again, two scenarios emerge within this category. First, there is a group of women who assume full responsibility in all stages of the value chain except in the use of proceeds where they are required to consult their husbands. This category is represented by women whose husbands have an alternative source of income either from important cash crops such as tea and coffee or off-farm employment in a different town as is the case in Marani where avocado is less valuable than coffee and tea. In this case, the women make decisions regarding the production and marketing of the produce, but they are required to consult their husbands on the use of the proceeds. The second scenario depicts women whose husbands depend entirely on avocado as the main source of income as is the case in Kandara where returns from cash crops like coffee have diminished over the years and most of the men have retired from gainful employment as shown by the average age of the household heads. Under this circumstance, the women in most cases participate in providing labour or tending to the crop and only make decisions on marketing of avocado of inferior quality. Because men make decisions involving sales of avocado of premium quality, women are left to collect the rejected pieces, which they sell to retailers in the nearby markets. Therefore, this category of women will need a multifaceted approach to integrate them into the export end of the value chain since they have limited control of the resources and skills required for the production of good quality avocado. Likewise, this second category of women is of major interest, particularly in Kandara, because the men by virtue of being registered members of the avocado groups attend training on certification standards, including good crop husbandry, yet the women are the main managers of the crops. Because the EU market is strict on certification standards, involvement of this category of women in the crucial stages of the avocado value chain will be critical for the improvement of the quality of the produce. This is likely to be a win-win strategy for the household (husband, wife and children) as well as the exporters and might result in increased benefits to all the value chain actors rather than the producers alone. Deterioration in the quality

of fruits being delivered to the market has been attributed to failure by the household heads (particularly men) to involve their spouses and children in the training programmes on certification standards, yet women and young boys play an active role in supervising the picking and picking of the fruits respectively. As such, strategies that foster intra-household information sharing will be crucial in improving the quantity and quality of the fruits that go to the export market as well as domestic markets, thereby improving the farmers' market margins.

In Marani, however, women participate fully in all the stages of the avocado value chain unless marketing of avocado is on a large scale, particularly those selling to brokers and large scale traders who collect the fruits in lorries. Besides, men are reported to concentrate on other cash crops like coffee and tea, which provide higher returns than avocado. In this case, both the widowed and women living with their spouses assume full responsibility of the avocado, which is in most cases neglected by themen and considered asa useless crop. However, the introduction of the new variety of avocado, which is mainly for export, in the region is likely to alter women's position since men are more likely to turn to avocado as it becomes more commercialised. Furthermore, since women have limited control of productive resources such as land, the decision to change from low value avocado to high value avocado varieties lies solely with the men. Yet, a complete shift from the local to exotic variety of avocado seems to be the only feasible strategy to enhance market participation of the marginalised smallholder farmers in Marani in the avocado value chain because market opportunities for the local variety appear to be limited. Besides, the local variety has limited opportunities for value addition because it is reported to have very limited oil content as well as a short shelf life, which makes it less economically viable to process into oil and juices.

At the trading part of the chain in Kandara, women tend to dominate small scale or retail trading that involves sitting at the market, particularly nearby markets. Yet the returns from this activity are reported to be low compared to those from exports. On the other hand, the majority of the traders or intermediaries who collect avocado and deliver to exporters and processors were found to be men. Involvement in large scale trading or brokering requires resources such as funds, time, transportation equipment and networking skills, which most women are reported to lack.

Participation of women in international marketing or export market appears to be limited to lower level jobs that require keenness and patience and involve routine work such as sorting, grafting, and packaging while men are concentrated in high status, more physical, more remunerative activities. Consequently women have the potential to provide wage labour in these stages of the avocado value chain where they are reported to have competitive advantage over men. According to the exporters interviewed, the avocado export business is a high risk and capital intensive one and hence requires networking skills, knowledge of the industry, expensive equipment and assets such as cold storage facilities and sufficient time to manage the business. Yet women may be capital constrained, which probably explains why fewer women than men tend to venture into the business.

Table 15. Women's Participation in Stages of the Avocado Value Chain

Value chain stages	Kandara	Marani
Supply of germplasm	• Men dominate activities that require physical strength like top working of old trees. • In private institutional nurseries women constitute the majority of the employees. They are employed to do routine tasks that need keenness such as preparing potting media, filling the tubes, sorting, cleaning and planting seeds, grafting and untying healed grafts while men are engaged in skilful and managerial positions as well as tasks that require physical strength. • Individual nurseries are generally operated by male managers and grafting is mainly done by men	• Superior quality germplasm is not given priority as the seedlings grow by themselves. • Women who operate food kiosks stock and sell seeds to the nursery operators to be used in raising rootstocks. • Individual nursery operators are mainly men and most of the workers employed to do grafting are young men. Women do not take part in grafting as in Kandara because they lack the skills.
Production	• More women (51%) than men (49%) manage the fruits, but men own and control resources and revenue. • Women provide labour while men provide capital for purchasing inputs and attend training on certification standards such as Global Gap • Men make decisions when avocado of premium quality and large sums of money are involved. Women decide on the rejected avocado, which can only be sold to consumers and retail traders in the local markets. • Women in female-headed households are fully involved since they assume full responsibility of avocado trees upon the death of their husbands Married women whose husbands have more lucrative sources of income are involved at a higher degree than those whose husbands rely on proceeds from avocado.	• Avocado is completely neglected and left for the women if the returns are low • Where large volumes of sales and sums of money are involved; • Female-headed households are fully involved since they assume full responsibility of avocado trees upon the death of their husbands • Married women, whose husbands have more lucrative sources of income such as tea, coffee and off-farm income, are involved at a higher degree than those whose husbands rely on proceeds from avocado.

Sorting and grading	Professional graders are mainly men who have been trained to do grading for farmers at a fee. Women lack the skills	Men are rarely involved since avocado is of low commercial value and is rarely graded. Women sort avocado to remove spoilt ones.
Small scale trading	❖ Majority are women. Local trading is time consuming and needs patience, which men lack	Dominated by women
Large scale trading	❖ Large traders, who are mainly men, sell to exporters and processors based in Nairobi, Thika and Limuru. ❖ A few women are involved because they face higher entry barriers than men. • Women have limited access to assets, capital, market information and transportation. • High level marketing is also competitive and requires time, which women cannot manage as they have to split their time between domestic chores and productive activities.	Large scale trading is not common. However, a few large traders, mainly women occasionally buy fruits from small scale traders and transport to distant markets like Nairobi and Sirare in Tanzania. Men concentrate on more lucrative enterprises with better returns like coffee and tea
International marketing	❖ Men predominate this node of the chain because they have access to resources such as cold storage facilities, communication equipment, business skills, time, processing facilities as well as information ❖ The majority of the suppliers are men ❖ Women are hired to sort and pack while grading is done by machines, which are operated by men	

4.4 Collective Action and Women's Participation in the Avocado Value Chain

4.4.1 Findings from household survey

This section focuses on how collective action influences participation of women and producers in general in the upper end of the avocado value chain. Collective action is posited to enhance the bargaining power of the producers, ensure economies of scale and hence reduce transaction costs associated with searching for market information and marketing costs such as bulking, which would otherwise deter buyers from reaching small scale farmers with few fruits. In addition, through collective action, producers are likely to come up with innovations to alleviate production and marketing constraints and improve their access to alternative lucrative markets.

The results show that only 49% of those belonging to avocado groups in Kandara sell their produce collectively. Likewise, cases of side-selling are more common among women managers (57%) than among male managers (43%). Despite the existence of avocado groups, cases of side-selling are on the increase due to dissatisfaction with group marketing, because of lack of clarity on the terms of the contract among other reasons. While the results in Figure 9 appear to suggest that producers belonging to agricultural groups are more likely to sell avocado to actors in the upper end of the chain such as exporters, women in female headed households tend to prefer selling to brokers. Because women in female headed households are more likely to face cash and labour constraints, brokers could be responding to their immediate needs by providing cash payments and meeting the cost of picking and grading. This was evident in the FGDs where women alluded that they would prefer a buyer who takes care of harvesting costs and pays them in cash since harvesting requires climbing of avocado trees, which is strenuous for the women. Consequently, the findings appear to suggest that women's participation in avocado marketing groups is necessary but not sufficient to integrate them into the export end of the chain. Instead, integrating female headed managers into the export end of the chain may require that the contract with the buyer be revised to accommodate interlinked services such as picking of fruits, credit facilities and expedited payments.

Likewise, membership in agricultural groups does not seem to have an influence on the type of marketing channel chosen by the producers in Marani as shown in Figure 10. This finding is not surprising given that the producers in Marani were not engaged in group marketing of avocado. Indeed, few producers (25%) in Marani compared to Kandara (73%) belong to agricultural groups and the few existing agricultural groups in Marani focus mainly on food crops (39%) such as maize and beans, and cash crops like tea and coffee (14%). According to the producers in Marani, it does not make economic sense to sell avocado collectively because there are a few buyers who would be interested in buying avocado in bulk as large scale traders are fewer and less reliable than small scale traders and consumers.

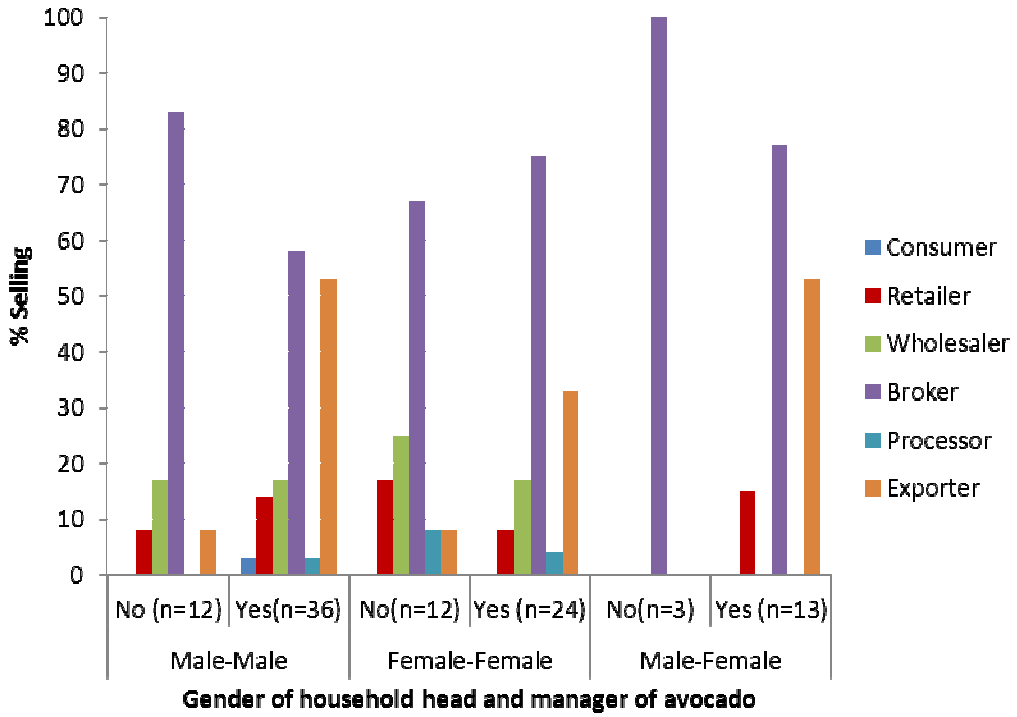

Figure 9. Choice of Marketing Channels in Kandara, by Group Membership, Gender of the Household Head and Gender of the Manager

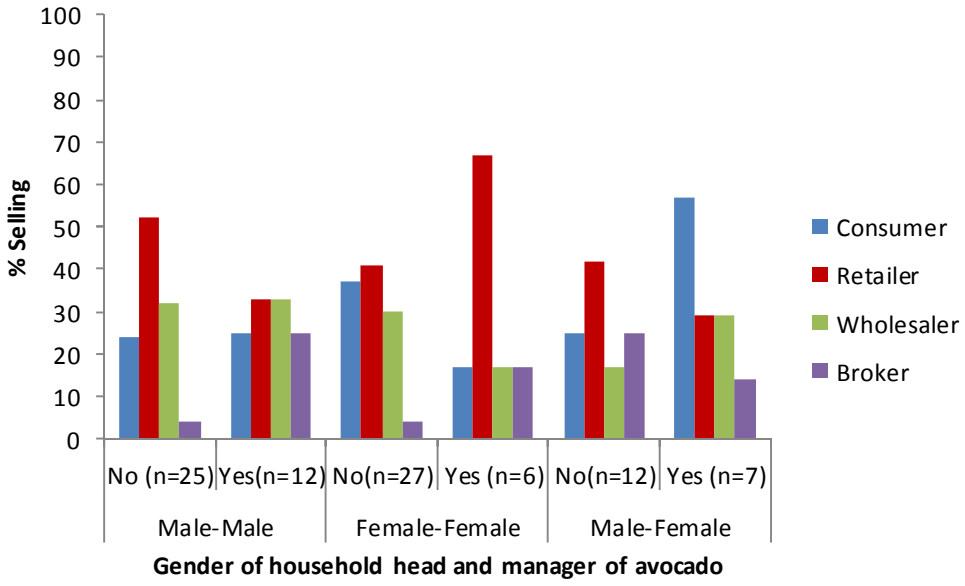

Figure 10. Choice of Marketing Channels in Marani, by Group Membership, Gender of the Household Head and Gender of the Manager

The findings suggest that women belonging to agricultural groups are more likely to sell to exporters than those who do not. Yet an in-depth analysis of the choice of marketing channels reveals that women who belong to agricultural groups are equally more likely to sell to brokers than those who do not. On the other hand, men belonging to groups are more likely sell to exporters than are women belonging to groups and fewer men belonging to groups sell to brokers than do those who do not belong to groups. A more pertinent question that merits further discussion is why women belonging to groups tend to sell to other actors despite being linked to an exporter who offers better prices than brokers. Likewise, the tendency for producers to sell to brokers and other value chain actors despite being linked to an exporter requires further exploration. To explore the aforementioned questions further, we turn to the findings from case studies of two groups namely Kariani Kiharu and Kawendo B, which were drawn from Muruka and Ngararia locations in Kandara division. Table 16 provides background information of the two groups studied, their characteristics and some of the innovations associated with them.

4.4.2 Description of Groups used in the Case Studies

Table 16. Background Information of the Groups used for Case Studies

	Kariani Kiharu	Kawendo B
Year of formation	2004	2004
Initiator	MoA and KBDS	MoA and KBDS
Purpose	Avocado marketing and other agricultural practices	Avocado marketing
Number at inception	35 (25 Male, 10 Female)	25
Current membership	13	20
Governance structure	Executive committee consisting of chairman, vice chairman, secretary and treasury. Other committees in charge of production and marketing	Executive committee consisting of chairman, vice chairman secretary and treasury. Other committees in charge of production and marketing
Gender of officials	3 men	3 men
Age structure of members	Mixed age group but majority are over 50 years old	Majority are of advanced age of about 60 years and over
Costs	Membership fee, which can be recovered from the produce at 5% of the produce delivered; deductions of KES 0.50 per fruit as facilitation fee for AGAK officials	Membership fee, which can be recovered from the produce at 5% of the produce delivered; deductions of KES 0.50 per fruit as facilitation fee for AGAK officials
Governance mechanism	Bylaws to govern side-selling; fines of KES 500 and recently excommunication	Bylaws to govern side-selling; fines of KES 500 and recently excommunication
Enforcement mechanisms	Group policing	Group policing
Buyers dealt with	EAG, Fine Link, KHE, Ideal Matunda, and currently Vegpro	EAG, Fine Link, KHE, Ideal Matunda, and currently Vegpro

Innovations		
Financial	Purchase of shares which is ploughed back into the group's account Table banking and provision of loans to members two years ago	Writing of grant winning proposals to raise funds for revolving credit scheme within the group. This is to cater for spraying services as well as inputs
Marketing	Contract with an exporter through AGAK. Free rider problem and cases of side-selling are reported to be on the increase due to mistrust of AGAK officials by the group members	Contract with the exporter through AGAK. Traceability certificate or certification standards has reduced free rider problem. All the group members sell together and enjoy premium prices. Provision of grading services to the members by one of the members who was trained in grading.

Source: Case studies

4.4.3 Innovations

The two in-depth case studies provided insights into some of the innovations that are likely to enhance the producers' access to more lucrative markets for avocado.

Financial innovations

A form of financial innovation, which was noted in one of the groups, is the introduction of saving scheme through purchase of shares. The shares belong to the members but the amount varies between KES 1000 and 4000 depending on the member's ability to invest. The saving scheme encourages the group members to save some of the proceeds from avocado for future use. The funds can be used to smoothen consumption shocks and reduce cases of side-selling, which are reported to be on the increase and are threatening cohesiveness of the groups. However, this kind of financial innovation is less likely to improve participation of women in particular and producers in general in group marketing as well as their access to export markets because the savings are not lent out to the members. One of the groups studied practiced table banking two years ago and was able to provide loan to its members at an interest rate of 1 per cent per month. Payment was recovered from the produce in instalments and the amount recovered on the basis of the percentage of the amount of produce delivered by the member. The group no longer practices table banking because some members were not able to raise the required amount of KES 200. This activity was discouraged because it was seen to create social classes within the group. The groups were reluctant to lend money to the members because of fear that some members are likely to side-sell their produce and default on the loan. Although there are mechanisms for preventing side-selling, such as bylaws, which provide for fining and more recently excommunication of those who side-sell, these bylaws are hardly enforced. It appears that enforcement mechanisms such as group policing are not effective as shown by the high number of members engaged in side-selling. In most cases members who chose to side-sell opted to drop out of the group rather than pay fines.

Similarly, one of the groups studied has written a grant winning proposal in a bid to source for funds from other institutions. For instance, in order to ensure financial sustainability, the group has written a proposal in a bid to apply for funds through a government initiative known as "Njaa Marufuku". The proposal has been defended by one of the group members, who is also an official of the AGAK, and attracted an amount of KES 2 million. The fund is supposed to be deposited in the group's bank account as a revolving fund for the purchase of inputs such as pesticides and spray pumps. The group members will be eligible to borrow the funds whenever they are in need. However, the loan does not attract interest if the money is lent to a member of the group. The loan will be recovered from the farmers' proceeds because cases of side-selling among members of this group are minimal.

Marketing innovations

Contract farming

The producers in Kandara who belong to avocado groups are involved in a tripartite contract with officials of the groups, AGAK and the exporter (Vegpro Kenya Ltd). The contract was negotiated by AGAK on behalf of the farmers and the signing of the contract was witnessed by the HCDA. The producers are represented by officials of their respective groups. Consequently, most of the farmers are not aware of the terms and conditions of the contract. Prior to entering into a contract with Vegpro in 2009, the producers had been linked with other exporters such as EAG, KHE, Sunripe and Kakuzi Ltd. Challenges associated with this type of contract notwithstanding, the contract has facilitated the producers' participation in the export market in a number of ways.

Farmers in active groups have been able to produce high quality fruits that fetch better prices in the international market, thereby minimising rejection rates. This has been made possible through training on GLOBAL GAP standards, certification and acquisition of traceability certificates. The training is reported to have improved hygiene at the farm and homestead and minimised losses associated with rejected fruits that fail to meet buyer specifications. Group training has been reported to be cost effective because farmers are able share information amongst each other on good agricultural practices.

Some of the innovations associated with collective action include facilitating the producers to obtain certification standards or traceability certificates. Given that certification standards are generally too expensive for individual farmers to afford and the requirements too demanding for small scale farmers particularly women to meet; the AGAK in collaboration with the exporting company has been able to facilitate some of the farmer groups to acquire the certification through their respective groups. However, only members in two groups out of the seven groups selected for the survey, namely Kawendo B and Muthiga Gitumbe had been certified. Further discussions with the groups revealed that these two groups have AGAK officials as members. Consequently, it appears that connection with the AGAK officials plays a major role in facilitating acquisition of the certificate. Although the certification fee is reported to vary by farm size, the fee is reported to be around KES 300000, which many groups cannot afford, the two groups that obtained certificates for their members were assisted by the AGAK to raise the certification fees.

Acquisition of certification standards has been reported to act as an incentive for the members to employ good agricultural practices on their farms because of assurance of good prices since the traceability system has been able to overcome the free rider problem that is usually associated with group marketing. The results presented in Table 17 provide anecdotal evidence that certified farmers are likely to receive significantly higher prices than those who are not. Likewise, collective marketing is likely to be beneficial to the producers because they are able to negotiate

for significantly higher prices than producers who sell individually as indicated by the results presented in Table 17.

The finding that the majority of producers who sold to exporters through the group came from the groups that have adopted the traceability system lends credence to the proposition that traceability system enforces checks and balances on free riders. Furthermore, to the extent that two of the groups have adopted the traceability system, consumers abroad are able to trace the products up to the producers' farms. The group members, thus, derive satisfaction from the visits made by those who buy their products. Similarly, the consumers' visits provide checks to ensure that the buying company does not exploit the producers. The visitors were seen by the producers to play the role of an external auditor. In addition, the traceability system is reported to foster transparency and reduce information asymmetry, which was noted to be prevalent among farmers belonging to groups that have not been certified. In these groups, rejection rates were noted to be considerably high, yet information on the basis for rejecting the fruits was hardly provided. Furthermore, the rejected fruits were never returned as is the case with groups that have obtained certification standards.

The following statement, which was made by women in one of the FGDs, best captures the level of mistrust between group members and their officials.

> *"How comes the company cannot issue us with official receipts? We need official receipts which should be accompanied with explanations on the number of fruits rejected, why they were rejected, the number of fruits accepted including their respective grades and prices. We always receive hand written receipts that indicate only the amount entitled to us. As such, we suspect that someone is benefiting from our hard work. This is why we have decided to sell to brokers instead."*

The groups that obtained traceability certificates prefer to sell through the group because the exporter offers better prices such as KES 3.50 per fruit. The prices offered are said to vary by the quality of the fruit. Some fruits fetch a premium price of up to KES 7.00 per fruit. On the other hand, those side-selling to brokers are offered between KES 1.00 to 1.50 per fruit, but the broker meets the costs of harvesting, sorting and grading, and transportation from the farm gate.

Other pathways through which collective marketing enhances participation in the export market include realisation of economies of scale. A number of buyers particularly, exporters and processors, are reluctant to buy from individual farmers because of the high transaction costs associated with bulking of the produce. Kawendo B members noted that group marketing enables them to achieve economies of scale since farmers are able to pool their produce and sell together. Consequently, Kawendo B group has been able to harness this opportunity by pooling produce from the members as well as from members outside their group who belong to inactive groups such as Naaro-Kahuma and Iriguini Self-help groups in Kawendo sub-location.

Group marketing has made it possible for the members to benefit from group banking, which has reduced banking charges that would have been incurred if the farmers acted individually. Group

banking has been made possible through the group since all members receive their proceeds through the group account.

Social benefits to women that are associated with group marketing include being able to transact with the exporters. Elderly women who are not able to read and write can easily transact through the group because they are assisted by other slightly energetic and educated members who offer to collect the women's proceeds on their behalf. In addition, such elderly women do not have to spend extra time and energy in search of markets for their produce since the buyer collects the produce at designated collection points.

Table 17. Benefits of Collective Marketing and Certification

	Group Marketing	Individual Marketing	ttest	Certified groups	Non Certified groups	ttest
Fuerte						
Average price[a]	2.09	1.24	5.038***	2.21	1.4	3.039***
Exporter price	3.16	1.30	3.881***	3.23	2.75	NS
Average GM[b]	1.02	0.63	NS	0.72	0.8	NS
Exporter GM	2.04	1.08	NS	2.33	1.52	NS
Hass						
Average price	3.48	2.36	5.266***	3.48	2.73	2.277**
Exporter price	3.99	2.58	2.69**	3.9	3.87	NS
Average GM	1.35	1.97	NS	2.07	1.1	NS
Exporter GM	1.53	2.20	NS	2.23	1.77	NS

***, **, * denote significance at 1%, 5% and 10% level respectively; NS means not significant; [a]prices are in KES per fruit; [b]Gross margin in KES per fruit

Source: Household survey

The innovations associated with collective action notwithstanding, collective action does not seem to have enhanced the participation of women in the avocado export market. In fact, the two groups studied did not have women in decision making positions. Indeed, most of the groups had fewer women because only female household heads are allowed to belong to the avocado groups. In one of the groups, women were elected into the position of treasurer but they declined because of insecurity. It is reported that the positions come with added responsibilities, yet women do not have time to attend to such responsibilities. Furthermore, officials are required to own trees, have sufficient property that can be attached in case of embezzlement of funds. These requirements are likely to act as barriers for women in male headed households to ascend to leadership positions within the group because trees are generally owned by men. Yet, most of the women who belong to the avocado groups assume their husband's position upon death, but they are not keen on taking up leadership positions in the groups.

Challenges of group marketing

While group marketing or contracting is preferred because the payment comes in bulk, farmers have experienced a number of challenges that have made some of them turn to brokers who offer lower prices than those given by the exporters. The group members reported that they sell to brokers because brokers provide business services such as transport, picking, sorting and grading. The brokers recruit and pay their pickers who double as sorters and graders. Consequently, post-harvest losses associated with immature fruits being picked from the trees are minimized. Likewise, although the farmers expected participation in group marketing to reduce risks associated with price fluctuations, the current buyer pays farmers according to market rates, and hence the prices are not negotiated upfront. Furthermore, the farmers are not informed of the prices until the fruits are sorted, graded and the prices determined. It is important to note that all the aforementioned functions are performed at the exporters' premises rather than at the farm gate as is always done by the broker. Box 1 summarises some of the challenges associated with group marketing, which if addressed could improve access by the producers to markets that offer better prices.

Box 1. Challenges of group marketing

Delayed payments: This is a major problem to groups as it causes some farmers to start side selling their produce. The buyer is reported to process payments within two weeks, but owing to the waiting period that is required for the transactions to be effected and given that the groups have to wait for their officials to collect money from the offices of the AGAK, the payments sometimes delay by as long as one month. Thus, there is need to explore the possibility of the buyer transacting directly with the groups to shorten the period needed for the transactions.

Lack of price information: The buyer does not provide farmers with information on prices and grades until during payment. The reason for not deciding on the prices upfront is because of uncertainty in the international market. As a result, this type of contract farming does not stabilise the farmers' prices as is generally the case with most contracts.

Grading: The buyer grades from own premise in the absence of farmers, which creates suspicion as farmers are not sure if the information on the rejected fruits is right. Farmers propose that the buyer should grade at farm gate so that the farmers are sure of the quantities sold.

Harvesting: Farmers are required to harvest on their own, which is a challenge to the elderly, particularly women. The farmers recommended that the buyer should meet the cost of hiring a trained harvester who will only select the fruits that meet buyer specifications at harvesting.

Administration fee: Administration fee charged by AGAK of 50 cents per fruit is deemed to be too high for the services offered. AGAK offers facilitative role and does not even have a permanent office at the moment.

Mistrust: There appears to be some mistrust between group members and the AGAK officials. Farmers reported that they deliver their fruits to AGAK through the group without knowing the value of their produce. Thus, marketing through the AGAK does not necessarily enhance the farmers bargaining power, since AGAK does not provide the farmers with room for negotiation. While group marketing was expected to provide the farmers with a voice to negotiate for better prices, the negotiation seems to be taking place between AGAK and the buyer. However, the group members appear to have lost trust in the officials of the facilitating body (AGAK). Complaints such as presentation of hand-written receipts rather than typed receipts (original receipts) and suspicion of payments being altered are rampant.

Rejection: Percentage rejection rates are reported to be much higher if farmers market in groups than if they do so individually. Furthermore, the rejected produce is rarely returned to the farmers for verification. It is reported that the fruits rejected by the graders who grade for group members can still be sold to the same buyer through brokers.

4.4.4 Benefits of group membership

Table 18 provides a summary of the benefits of group membership irrespective of whether the respondents belong to agricultural or non-agricultural groups. According to the data, producers in Kandara participate in agricultural groups because it enhances their access to ready markets and acts as a source of information on production and marketing of their produce. By being a member of agricultural groups, farmers can easily access training on certification standards because the majority of the institutions that provide training to the farmers prefer group training because it is deemed to be cost effective. The farmers belonging to groups perceive the groups as a link to markets that offer better prices. While individual farmers have limited market options, farmers in groups have access to other buyers such as exporters and processors.

In Marani, where avocado groups are not available and only 25% of the farmers belong to agricultural groups, agricultural groups are seen as a major source of information. Groups initiated by an NGO called One Acre Fund, were provided with information on maize production and marketing, which explains the high importance placed on information by the farmers in Marani. In addition, farmers obtain inputs on credit through the groups. Contrary to agricultural groups, membership in non-agricultural groups assures farmers of credit in both the sites as suggested by the proportion of farmers reporting credit as a benefit in Kandara (59%) and Marani (56%).

Similarly, group members have reported social benefits such as welfare improvement. For instance, the members state that their economic status has improved since they joined the groups. Unlike before, some members attested to being able to purchase agricultural assets and inputs such as a goats, dairy cows, and fertilizer among others. Besides, others are now able to pay school fees for their children with ease since the payment comes in bulk. Yet still, others have ventured into off-farm activities such as tailoring by investing the funds obtained from group marketing. Likewise, benevolent fund, amounting to Ksh. 500, is usually given to members who lose close relatives, However, because of an increase in the cost of living and group investments which have assisted farmers to diversify their sources of income, members are reported to contribute more than the stipulated amount.

Table 18.Benefits of Group Membership

	Kandara	Marani

	Agricultural	Non-agricultural	Agricultural	Non-agricultural
None	10	6	0	2
Information	40	12	72	16
Higher prices	35	-	-	-
Credit/loan	16	59	28	56
Ready market	69	2	12	2
Savings	2	24	8	2
Lump sum income	3	6	8	34
Welfare improvement	3	11	4	10
Access to input	-	-	-	3
Financial support	-	11	-	2
Moral support	-	3	-	10
Spiritual nourishment	-	-	-	5

Source: Household survey

Membership in groups, particularly avocado groups has not only benefited the members, but spill over effects have been reported as follows:

- Some farmers have been able to learn about standards-EurepGap, Global Gap and recently Kenya Gap from group members either by consulting or just by observing. The levels of hygiene in their houses and farms have increased.
- Non-members have acquired skills on farm management and farm layout/planning from their neighbours who benefitted from the training through the group.
- Group marketing has helped drive prices offered by brokers up because of stiff competition. Consequently, non-group members have benefitted from increases in the price of the produce.
- Prices of avocado have gone up because of the presence of many buyers in the region and an increase in the bargaining power of farmers. Brokers are now offering better prices to non-members than what they used to offer before.

4.5 Opportunities for Growth in the Avocado Value Chain

Several opportunities exist along the avocado value chain as shown in Tables 19 and 20, which can be harnessed to enhance participation of the marginalised groups in the value chain. Such

opportunities include unmet demand for avocado in the domestic and international market. There is increased awareness among consumers in the EU about the health benefits of avocado. In addition, domestic consumers are becoming increasingly aware of the nutritional and health benefits of avocado. Consequently, market opportunities are opening up in other towns such as Garissa and Mwingi. Furthermore, there are initiatives to promote consumption of avocado and increase awareness among domestic consumers about health benefits of avocado. For instance, women who prepare porridge served with maize and beans in the roadside kiosks (small food kiosks) are currently advised to sell avocado as well. This initiative is reported to have increased the consumption of avocado in the domestic market particularly in Western Kenya where avocado is produced particularly for the local market.

In the EU market, there is increasing demand for avocado fruits as well as for extra virgin edible avocado oil and crude avocado oil for cosmetics. The demand for processed avocado oil is reported to exceed supply because there is shortage of raw materials following competition between exporters and processors for Hass variety. Hass is reported to have higher oil content than Fuerte variety, which is Hass's close substitute. However, the actors are optimistic that the constraint will soon be alleviated since many farmers have grafted most of the Fuerte trees with Hass and have started harvesting the fruits. Likewise, in Kisii, a number of farmers have started planting Hass variety, although the uptake was noted to be high outside the site (Gucha and Kenyanya districts) that was selected for this particular study. Marani, the study site for FORD phase II project, is reported to be one of the most densely populated districts in Kisii, which could explain the low uptake of Hass variety. On the other hand, lack of awareness of the benefits of the new variety could be another major factor contributing to the low uptake.

Another opportunity that can be tapped by farmers in Kisii or areas experiencing severe land constraints according to a nursery operator, who was interviewed in Kisii, is the availability of Hass variety that is suitable for small parcels of land. This variety of avocado is developed using low back grafting method and hence has a smaller spacing recommendation than the original variety of Hass.

The presence of existing farmer groups in Kandara is yet another opportunity that can be harnessed by processors, traders and exporters to improve the quality of fruits delivered to the markets as well as to reduce bulking costs. Most of the actors reported that the high cost of bulking deters them from purchasing fruits directly from individual farmers who own an average of three trees. Administering training on certification standards and enforcement of the standards is economically feasible with groups than with individual farmers. However, those actors keen on producing organic avocado for the niche market in extra virgin oil appear to prefer working with individual farmers because it is easier to monitor the quality and enforce penalties when there is a breach of contract on the requirements. While farmer groups focusing on avocado are not common in Kisii, the existence of groups that focus on other enterprises such as maize or table banking can be used as a platform to organize farmers into avocado marketing groups. Nevertheless, clarity in the terms of engaging the farmer groups, which entails revealing the

terms of the contract to the farmers, is paramount in dealing with the groups. Likewise, reducing the number of partners involved in negotiating the terms of the contract is likely to reduce information asymmetry and enhance group cohesiveness.

To the extent that access to support services such as spraying, picking and grading, which are crucial for the production of high quality avocado appears to be limited, particularly for the women farmers in Kandara, the existing groups can tap into this opportunity by pooling the resources to hire such services. Alternatively, the contracting companies can consider providing interlinked services, which can be deducted from the farmers' proceeds. However, constraints such as unclear terms of engagement and delayed payments have to be alleviated to reduce cases of side-selling by the farmers.

There are a number of initiatives geared towards promoting the cultivation of Hass variety and ensuring that certification of standards is met. Such initiatives include, the establishment of Practical Training Centre at KARI Thika to train actors in the avocado value chain, certification of nursery operators by HCDA to produce and distribute healthy planting materials and adaptation of the GlobalGap into KenyaGap by the Fresh Produce Exporters Association of Kenya (FPEAK) to enhance acceptability of horticultural products from Kenya in the international market. The initiatives are likely to increase employment opportunities for women in areas where they have competitive advantage along the avocado value chain such as in the supply of germplasm (grafting), sorting and packing of avocado.

Availability of clean planting material, such as grafted and certified avocado seedlings, is one of the opportunities that farmers can harness to increase the supply of Hass variety. Increase in supply is likely to have multiplier effects along the chain for the farmers, exporters and processors. Avocado from Kenya is currently fetching lower prices than what it would have fetched if it were of the recommended, size yet the avocado from Kenya is preferred by buyers in the international market because of its unique and better taste.

Some exporters are planning to enter into contract with farmers as out growers to improve the production and quality of Hass. This opportunity can be tapped by smallholder farmers who are likely to benefit from the initiative if they enter into contracts directly with the buyer. The majority of the farmers reported in the FGDs that they would prefer to deal with the buyers directly than through an intermediary such as the AGAK because of bureaucracy, which results in information asymmetry and mistrust of group officials and the buyer by the farmers. Information asymmetry has heightened side-selling and resulted in most of the farmer groups disintegrating and opting to sell to market intermediaries (brokers). On the other hand, the buyers are reluctant to enter into contracts directly with individual farmers because of the transaction costs involved in administering training to individual farmers, enforcing quality standards and collecting the produce since majority of the farmers have fewer trees.

The proposed payment scheme that is being suggested by one of the exporters who was interviewed is likely to benefit farmers and motivate them to apply good agricultural practices on their trees. The payment method to be adopted will be similar to that used in the tea sector, which is usually in two tranches namely cash payment on delivery and bonus payment at the end of the year. This method is thought to work better for smallholder farmers than the spot payment, where high rates of side-selling are reported to be a major constraint to contract farming in avocado. While collective action is posited to enhance the farmers' bargaining power and reduce transaction costs of searching for market information, it appears that this hypothesis works under special conditions, such as where there is direct contact between the buyer and the producer and where the rules of the game are clearly known to both the parties (i.e. no information asymmetry). In this regard, terms of the contract should be discussed by the buyer and the seller rather than through an intermediary.

4.5.1 SWOT analysis of the avocado value chain

The aim of SWOT analysis is to identify strengths in the export and domestic avocado value chains that can be used to exploit opportunities and mitigate threats as well as identify weaknesses that need to be addressed to take advantage of opportunities or minimised to reduce potential damage from the external threats. The results of SWOT analysis for the two avocado value chains are presented in Tables 19 and 20.

Table 19. SWOT Analysis of the Avocado Value Chain in Kandara

Internal Factors / External Factors	**Strengths (S)**	**Weaknesses (W)**
	Good road network Proximity to major towns where pack houses are located such as Nairobi Farmers are knowledgeable about good agricultural practices and certification standards Access to training services on certification standards High levels of uptake of Hass variety High degree of involvement of women in production Low input enterprise	Few women are involved in the trainings on certification standards Few women participate in decision making on sales Limited access to services such as spraying, picking and grading Aging population of producers Diminishing land sizes
Opportunities (O) Favourable climate for avocado production Unmet demand for fresh avocado and processed products in the international and domestic market Possibility of major exporters sub-contracting out growers on better terms Availability of regulatory bodies e.g. HCDA, FPEAK Existing grass root institutions such as farmer groups and AGAK that coordinates the groups Availability of institutions that provide clean planting material	**SO strategies** Focus on improving quantity and quality of the products at the farm- gate to tap into opportunities such as premium prices, better contracts and the growing demand for processed products such as extra virgin oil.	**OW strategies** Farmer groups to pool resources and hire services such as spraying, picking, and grading. Alternatively, buyers can use existing groups to provide interlinked services to the farmers at a fee. This could improve women's participation in the export market
Threats (T) High incidence of pests and diseases Loss of customer brand loyalty due to poor quality of fruits from Kenya Disintegration of groups due to side-selling Vertical integration by buyers Stringent quality standards Increase in levels of consumer awareness on food safety standards	**ST strategies** Facilitation of producers to obtain certification standards and adopt traceability system. This will reduce free rider problem, improve the quality of fruits, curb mistrust between farmers and AGAK and strengthen farmer groups.	**WT strategies** Involvement of women and adult children in the training on certification standards. Joint decision making is already taking place and can be exploited to increase women's involvement.

Table 20. SWOT Analysis of the Avocado Value Chain in Marani

Internal Factors / External Factors	Strengths (S)	Weaknesses (W)
	Good road network Farmers, particularly women, have experience in avocado production Low input enterprise	Limited access to training on good crop husbandry Diminishing land sizes Low levels of uptake of the highly demanded avocado variety Low levels of awareness of improved varieties of avocado
Opportunities (O) Favourable climate for avocado production Unmet demand for fresh avocado and processed products in the international and domestic markets Proximity to Kisumu airport and border towns Availability of regulatory bodies e.g. HCDA, FPEAK Existing non-agricultural and few agricultural groups in which avocado activities can be embedded Availability of institutions that provide clean planting material Availability of low back grafted avocado suitable for land scarce areas There are initiatives to promote the production of the highly demanded avocado variety (Hass)	**SO strategies** Focus on improving adoption of high value avocado varieties to tap into existing opportunities in the international, regional and domestic market.	**OW strategies** Strengthen existing groups and use them as a platform to create awareness on availability of high value avocado varieties that are suitable for land scarce areas. Training on certification standards can be effected through these groups
Threats (T) High incidence of pests and diseases Diminishing demand for local varieties High number of competitors in other major towns such as Kisumu Limited value addition options for the local variety	**ST strategies** N/A	**WT strategies** N/A

5. Conclusions and policy implications

The findings show that the export avocado value chain in Kandara is well developed and elaborate and consists of many actors including nursery operators, farmers, traders, brokers, processors and exporters while the chain for the locally marketed avocado such as the one in Marani is relatively short and includes nursery operators, farmers, brokers and traders. Brokers and exporters are the main players in the avocado value chain in Kandara while retailers and consumers constitute the main buyers in the local avocado value chain in Marani. Nevertheless, the majority of the producers in Kandara and particularly women prefer to sell to brokers despite the low prices offered and the low gross margins derived from this channel. Brokers are preferred to exporters because they provide instant payment and meet the cost of picking, grading and transporting the fruits from the farm gate, which are the major constraints that limit the participation of women in female headed households in the export end of the chain. In Marani, consumers are preferred because they offer better prices than other buyers and can be easily reached in the nearby markets without necessarily incurring additional costs such as transport costs. Likewise, retailers are preferred in Marani because they are available throughout the season and they travel to the farms to collect the produce unlike large scale traders who are unreliable and only transact with the farmers when there is scarcity of fruits in other major producing regions.

With regards to women's participation, the results suggest that designing an intervention that aims at integrating women in agricultural commodity markets, particularly in the male dominated commercialised value chains such as that of avocado for export, might require multipronged approaches that involve understanding complex social issues surrounding intra-household resource allocation. Where the value chain is well-developed and elaborate as is the case with the export value chain, women tend to dominate the production stage or if they participate in the upper end of the chain, they tend to be confined to low paying and unskilled jobs such as packaging, sorting and grafting that require keenness and patience. However, women in female headed households appear to be fully integrated in most of the stages of the export value chain because they assume the responsibility of the household head upon the death of the husband. Consequently, integrating such women into the export end of the value chain will require alleviating constraints that limit their participation such as the provision of interlinked services like spraying, harvesting, and grading coupled with prompt payments. On the other hand, integrating women in male headed households in the export avocado value chain will require involving them in the training on certification standards. This is likely to improve the quantity and quality of the fruits sold to exporters and result in a win-win situation for all the actors as well as the households. To implement the aforementioned strategy, the increasing importance in joint decision making on sales and proceeds observed in male headed households in Kandara can be exploited.

In Marani, where the value chain is less elaborate and the demand for avocado is low, women appear to be fully integrated in all the stages of the value chain, because the avocado produced is of low value. Nevertheless, replacing the local variety with the improved ones appears to be the only feasible option to improve the value of the crop, yet this strategy is likely to alter the position of women, as men are likely to take over most of the functions as the value chain becomes more commercialised because men have control of the resources necessary for production. Because women in Marani have competitive advantage of having the knowledge and experience in avocado production, institutions promoting the uptake of the new variety can tap into the existing strength to ensure that women are not displaced from the chain. Such activities can be embedded in the already existing agricultural and non-agricultural groups where women dominate.

The innovations associated with collective action notwithstanding, it appears that women's participation in marketing groups is a necessary but not a sufficient condition for gaining access to lucrative markets such as the export markets. Instead, the provision of business services such as spraying, harvesting and grading, which are necessary for the production of quality fruits that meet buyer specifications as well as prompt payments, is paramount in alleviating constraints that predispose women managers in female headed households to exploitation by brokers.

Similarly, it can be deduced from the results that value chain governance structures appear to be more developed in the export than in the domestic avocado value chain and that market arrangements and transactions tend to be more formalised at the upper end of the chain in the elaborate and well established chains. Stringent quality standards coupled with the desire by the downstream actors (exporters and processors) to maintain customer brand loyalty in the international market necessitates the formalisation of the arrangements. In the lower end of the chain, transactions take place on the spot market and non-formal arrangements based on trust that is gained through repeated transactions and long standing relationships replace formal contracts. Whereas contractual arrangements are likely to help structure markets and provide producers with market options that offer better prices, the arrangements need to be accompanied by clear terms and conditions, which should be known to the buyers and sellers. For instance, issues regarding grading and pricing mechanisms as well as mechanisms governing the terms of the contract need to be clearly defined.

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Appendices

Table 1A. Summary of Governance Structures and Marketing Arrangements in the Export Avocado Value Chain

	Input supply	Production	Local trading /domestic	International marketing
Type of transactions	Spot market transactions dominate	A mixture of spot market and contractual arrangements	Spot market transactions are predominant	A mixture of spot market transactions and formal and informal contractual arrangements
Marketing arrangements	• Established institutional nurseries enter into informal contracts with CBOs, NGOs and vertically integrated export companies that buy in bulk • Informal arrangements are governed by trust that develops from long standing relationships with the buyers. • Quality of	• AGAK coordinates the registration of farmer groups and links them with buyers. • Farmer groups are enjoined in a tripartite contract that involves AGAK, officials of the groups and the exporter (Vegpro). • AGAK negotiates the terms of the contract on behalf of the	• Informal arrangements exist between suppliers and traders. This arrangement is based on trust that has developed through repeated transactions. Advance payment may be provided to the supplier to help cement the relationship and	• Contracts regulate the quantity and quality of fruits • Formal contractual arrangements with suppliers e.g. farmer groups and medium scale individual farmers. • Informal contracts with suppliers such as brokers, which are based on trust that is gained

	planting material is regulated by institutions such as HCDA	farmers. • Farmers are loosely bound in the contract and terms and enforcement mechanisms are not clear • Bylaws are formulated by farmers in the groups to curb side-selling • Group policing is used to enforce bylaws • For non-group members, spot market transactions are common. Buyers do not have close relations with the producers	assure the supplier of the buyer's commitment. • No trader associations to influence prices • Buyers impose less stringent quality standards; hence certification standards are less critical. However, traders and brokers who buy from farmers and sell to exporters impose quality requirements.	through repeated transactions and long standing relationships. • Formal contracts between exporters and buyers in international market • Quality is regulated by global certification standards and hence certification becomes critical (traceability system). • Prominent role of associations such as FPEAK and regulatory bodies like HCDA in enforcing regulations governing quality standards
Services	• After sales service such as transport,		• Advance payment to trusted customers	• Transport from designated collection points

	training on nursery management, follow up visits to frequent customers and those who buy in bulk. • Market information and information on other tree seedlings is provided to all customers • Discount prices of 10% to customers who buy in bulk	who have had repeated transactions with the traders. • Occasionally provide technical advice on GAP to suppliers • Brokers hire pickers and graders and pay for transport • Traders meet transportation costs from the farm gate	• Some provide interlinked spraying services at KES 55 per tree • Advance payment is provided to trusted customers with whom the exporter or processor has had repeated transactions • Technical advice and training on certification standards • Provision of packaging material to reduce damage to fruits during transportation

Table 1B. Summary of Governance Structures and Marketing Arrangement in the Local Avocado Value Chain

	Input supply	Production	Local trading /domestic	Cross border/regional trader
Type of transactions	Spot market transactions dominate	Spot market transactions dominate	Spot market transactions are predominant	A mixture of spot market transactions and informal contractual arrangements
Market arrangements	• Quality is regulated by institutions such as HCDA and associations like tree nursery association	• Buyers do not have close relations with the producers • No organised farmer groups	• Informal arrangements may develop following long standing relationship with the producers and small scale traders. • Advance payment may be provided to the supplier to help cement the relationship and assure the supplier of the buyer's commitment. • No trader associations to influence prices • Buyers do not impose stringent quality standards because certification standards are not critical.	• There are informal contracts with suppliers such as brokers, which are based on trust that is gained through repeated transactions and long standing relationships. • Little attention is paid to quality, but physical attributes are considered • The role of regulatory bodies such as HCDA and associations like FPEAK is less prominent because certification standards are not critical • Cross border traders do not have formal arrangements with the buyers in their countries

services	• After sales service such as transport, training on nursery management, follow up visits to frequent customers and those who buy in bulk. • Market information and information on other tree seedlings is provided to all customers	•	• Advance payment is provided to a limited extent to trusted customers who have had repeated transactions with the traders.	• Occasionally advance payments are provided to trusted suppliers