EGERTON UNIVERSITY

TEGEMEO INSTITUTE OF AGRICULTURAL POLICY AND DEVELOPMENT

IMPROVING PARTICIPATION IN AGRICULTURAL COMMODITY MARKETS FOR SMALLHOLDER FARMERS IN KENYA: ASSESSING GROWTH OPPORTUNITIES FOR WOMEN

SYNTHESIS REPORT

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1 Introduction

1.1. Background

Agricultural growth, especially in the early phases of development, is fundamental to broader economic growth and successful poverty reduction. This is because of high concentration of the poor in this sector, its strong growth linkages with other sectors, and its potential to offer low food prices to the urban poor (DFID, 2005). However, much of Africa's agriculture is characterized by semi-subsistence, low-input, low-productivity farming systems, which are not favorable to achieving this broad-based growth. Transformation to a more commercialized agriculture is, therefore, unavoidable if the broad-based growth is to be achieved (Morris et al. 2009). Better and more accessible markets are a fundamental ingredient to a more commercialized agriculture, just as technologies and macroeconomic policies, since they are key determinants of farm productivity, food prices, and food availability (ILRI, 2011). Well-functioning markets send effective signals that influence incentives for investments by firms, households and workers, and enhance their efficiency and opportunities (ILRI, 2011). Yet in developing countries, particularly in sub-Saharan Africa, markets for agricultural inputs, outputs and finance remain thin (Poulton et al., 2006), and infrastructure, both 'hard' (e.g. roads) and 'soft' (e.g. telecommunications and information) are poor. The result is high transaction risks and costs (Poulton et al., 2006), which can distort crop choices and significantly dampen farmers' returns from market participation as well as discourage them from producing for the market (ILRI, 2011).

While market failure is a major constraint to most 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 intensity of marginalization is more pronounced among women farmers because they face higher entry barriers than men in modern value chains. For instance, women have less 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 (Jiggins et al., 1997; FAO, 2011). 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, and in perishable or low value products (Baden, 1998; World Bank, 2003).

Addressing the challenges faced by these marginalized groups in accessing agricultural markets, remains a necessary priority in efforts to foster broad-based agricultural growth, and thereby contribute towards poverty reduction. However, interventions necessary for integrating marginalized groups into markets may differ by commodity market chain and by marginalized group. Hence, it is important to understand the constraints to market participation and types of interventions that can overcome these constraints in order to unlock opportunities for involvement along a given value chain. Identifying specific agricultural value chains and interventions that could offer the best opportunities for sales, income, and poverty alleviation for marginal groups is a critical step in the process of making beneficial investments that can transform the fortunes of these groups. Further, analysis of value chains in combination with characteristics of marginalized groups of interest and the nature of potential interventions would be helpful in informing the design of such interventions for greater impact.

This study sought to identify critical challenges that need to be addressed and assess growth opportunities that could be exploited to improve access to and participation by women smallholders in agricultural markets along three value chains namely sweet potato, avocado and indigenous chicken. This was achieved through detailed value chain analysis of these selected enterprises and case studies on selected marketing innovations that could enhance market participation.

1.2. Justification and Objectives

This study builds on findings from an earlier study carried out as a joint collaboration between Tegemeo Institute of Agricultural Policy and Development, Egerton University, World Agro-forestry Centre (ICRAF) and Makerere University on "Participation in Agricultural Commodity Markets among the Poor and Marginalized in Kenya and Uganda". The earlier study used household panel survey datasets in Uganda and Kenya, and aimed at identifying promising enterprises for the marginalized groups (poor, women, and households in low potential areas) based on the importance of market participation in various enterprises for the respective groups and/or growing trends in market participation by the groups relative to other enterprises. It also assessed household level factors that promoted market access and participation by the marginalized groups. The scope of the earlier study was limited to existing household data, and did not consider other aspects of the enterprises, notably the functioning of markets and value chains. Also, the earlier study results showed that participation in several enterprise markets and the degree of overall commercial orientation by marginalized groups was significantly and positively influenced by membership in farmer groups, an indication that collective action would be an attractive investment area for efforts aimed at increasing market participation by marginalized groups. However, how collective action promoted market integration for these groups was not understood in greater depth. This study attempts to address the above limitations of the earlier study, focusing on the three value chains and women as a marginalized group. The findings will contribute to knowledge base on feasible investment areas for fostering smallholder women's access to and participation in agricultural markets. The findings will be useful to policymakers, researchers and development practitioners in their work towards improving the welfare of marginalized groups in Kenya.

To achieve the objectives of the study, the following questions were considered:

a. What are the existing marketing arrangements along the value chains, and what are their characteristics?

b. What are the general constraints and opportunities that traders, processors and sellers have along the value chains? What are the specific constraints and opportunities that they perceive with regards to participation of smallholder farmers and women in the value chain?

c. What are the growth prospects – export, domestic urban, domestic rural- and for women in the enterprises?

d. What market related activities do farmer organizations/groups deal in, and what is the composition of members and their management and governance structures?

e. What are the views of farmers on the usefulness of collective action in terms of establishing and maintaining the link to the market? What could be improved? What additional benefits are associated with participating in the groups? What are the costs (monetary and non-monetary) associated with participating in the groups' activities? What do buyers perceive as the positive aspects of farmer collective action?

2 Methodology

The study involved initial identification and validation of enterprises/commodities that would hold promise in integrating smallholder farmers especially marginalized groups to markets. The identification entailed using the results of the phase 1 of the project plus additional household level data analysis, and key informant interviews. Three enterprises were identified: sweet potatoes, avocados and indigenous chicken.

Selection of the study sites was based on information obtained from an earlier study using household panel dataset, and key informant interviews with representatives of relevant institutions such as the Ministry of Agriculture (MoA), Ministry of Livestock Development, Kenya Horticultural Development Program (KHDP), Horticultural Crops Development Authority (HCDA), and the Promotion of Private Sector Development in Agriculture (PSDA). Analysis of household-level data showed areas that had the highest concentration of the three enterprises in terms of production and marketing. The indicators considered for this analysis were percentage of households engaged in the enterprises, acreage devoted to the crops, chicken stock levels kept, and percent of households selling produce or products from the enterprises. The selected study sites for the enterprises were: (i) sweet potato: Kabondo Division, Rachuonyo South District, Homa Bay County (ii) avocado: Kandara and Marani districts, located in Murang'a and Kisii counties, respectively; and, (iii) indigenous chicken: Mwala Division, in Mwala district, Machakos County and Longisa Division in Bomet district, Bomet County.

The identification of enterprises and study sites was followed by detailed value chain studies of the three enterprises as identified, focusing on the role of women in the value chains and opportunities and constraints they face. The aim was to identify critical challenges and assess growth opportunities that could be exploited in improving access to and participation by women in the value chains. Both qualitative and quantitative approaches were used in the study to collect information from a range of value chain players and key informants.

Household survey data used in this study were derived from 100 households drawn from each site for each enterprise. Because one of the objectives of the study was to understand the role of collective action in enhancing access to markets by women, sampling of the respondents was done from the existing farmer groups that focused on the enterprises, except in Marani district where farmer groups were not available and so stratified random sampling was used. A total of 65 households were randomly selected from the list of members from the groups, while the remaining 35 who were not members of any groups were selected randomly from the villages where the group members were located.

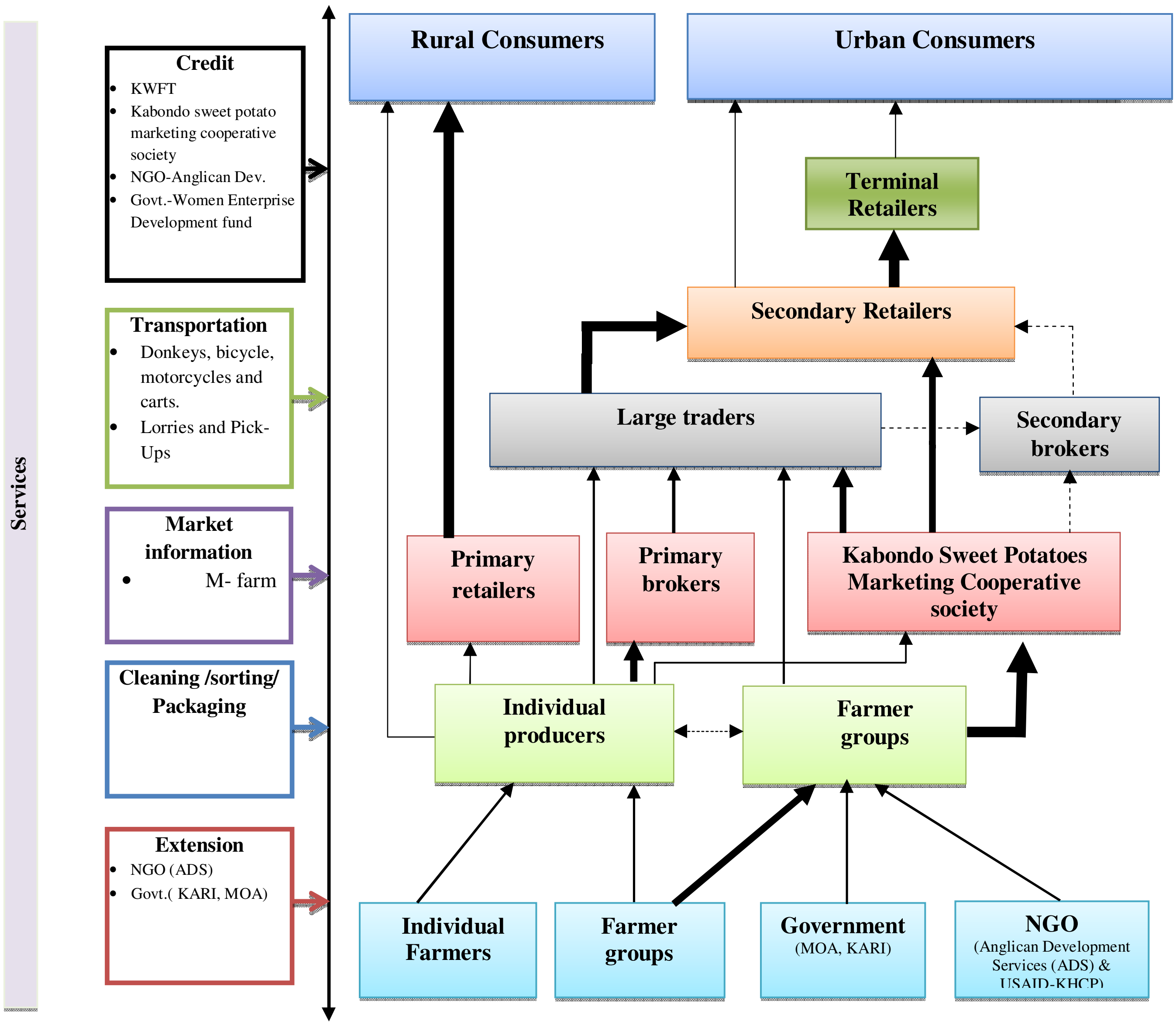
Focus group discussions were held with farmers in the study sites, and case studies conducted with selected farmer groups in order to gain an in-depth understanding of the role of collective action in enhancing the participation by women in the value chains.

3 Brief description of selected value chains

Sweet Potato

Sweet potato production is dominantly small scale, with producers mainly women who produce individually or collectively in groups. Production is both for subsistence and income. The producers rely mainly on their neighbours and/or farmer groups for planting materials. The government, through the Ministry of Agriculture and Kenya Agricultural Research Institute (KARI), and the Anglican Development Services (ADS) and the Kenya Horticultural Competitiveness Project (KHCP) funded by the United States Agency for International Development (USAID), who are promoting sweet potato production and marketing in the area, also provide farmers with planting materials. Producers sell sweet potatoes directly to consumers, primary retailers, primary brokers and to a cooperative society within their locality. They also sell to large traders that buy and transport to secondary markets outside the locality. The large traders sell to secondary retailers in the secondary markets in the urban areas away from the production area. The secondary retailers sell to terminal retailers, who buy in smaller quantities. The terminal retailers in turn break the bags and sell to consumers in smaller units. Figure 1 is a mapping of the sweet potato value chain showing the different players and product flow.

Figure 1: Sweet potato value chain map in Kabondo Division



Note: Thickness of the arrows represents the volume of flow while broken arrows signify the interaction between actors operating at the same level of market hierarchy

Avocado

The study included two sites for avocado, Kandara and Marani. Avocado production and marketing in Kandara revolves around two main exotic varieties namely Fuerte and Hass, whereas in Marani, the local variety dominates. 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. These are sold according to sizes and are hardly graded. Figures 2 and 3 below present the avocado chain in the two sites.

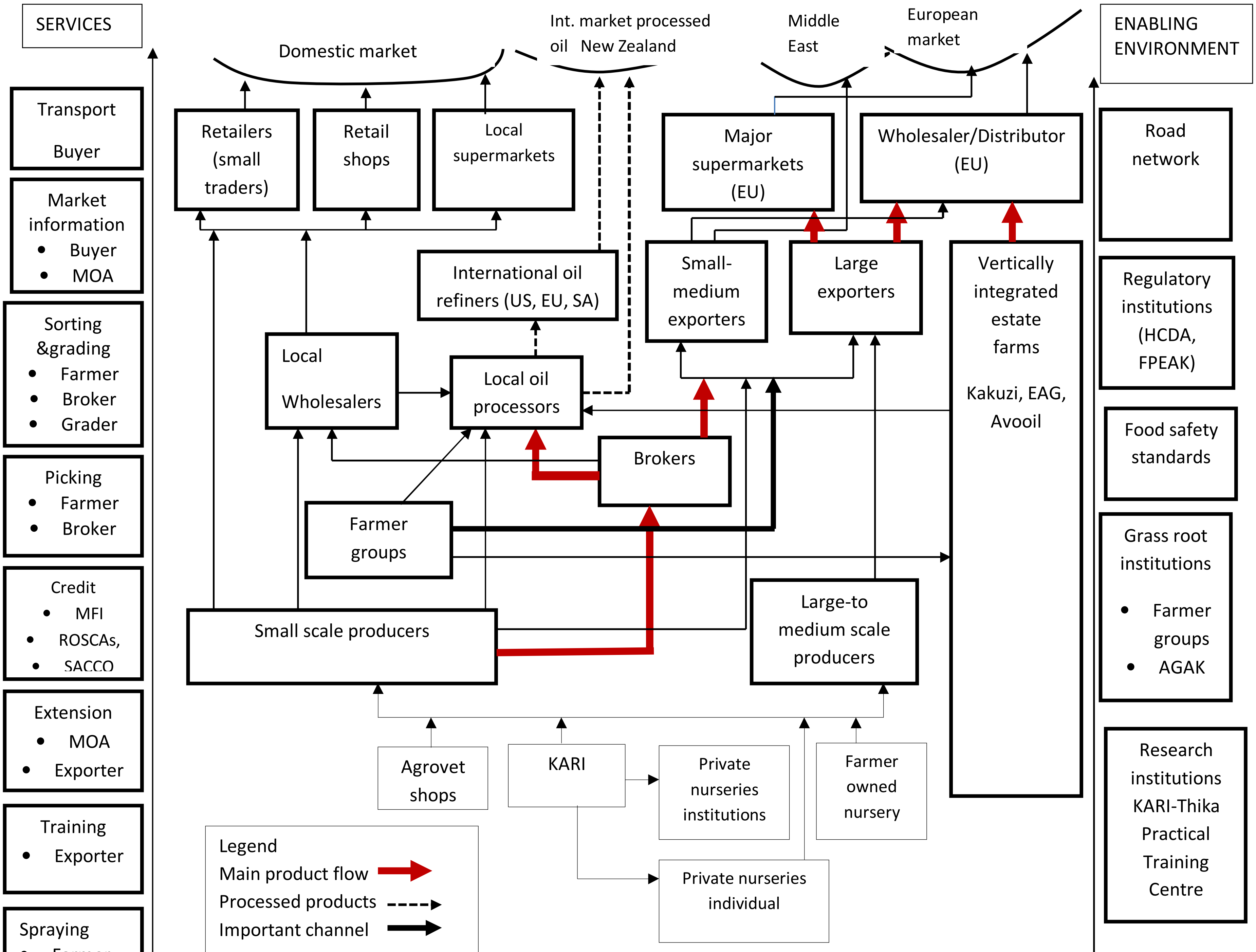


Figure 2. Avocado Value Chain Map for Kandara

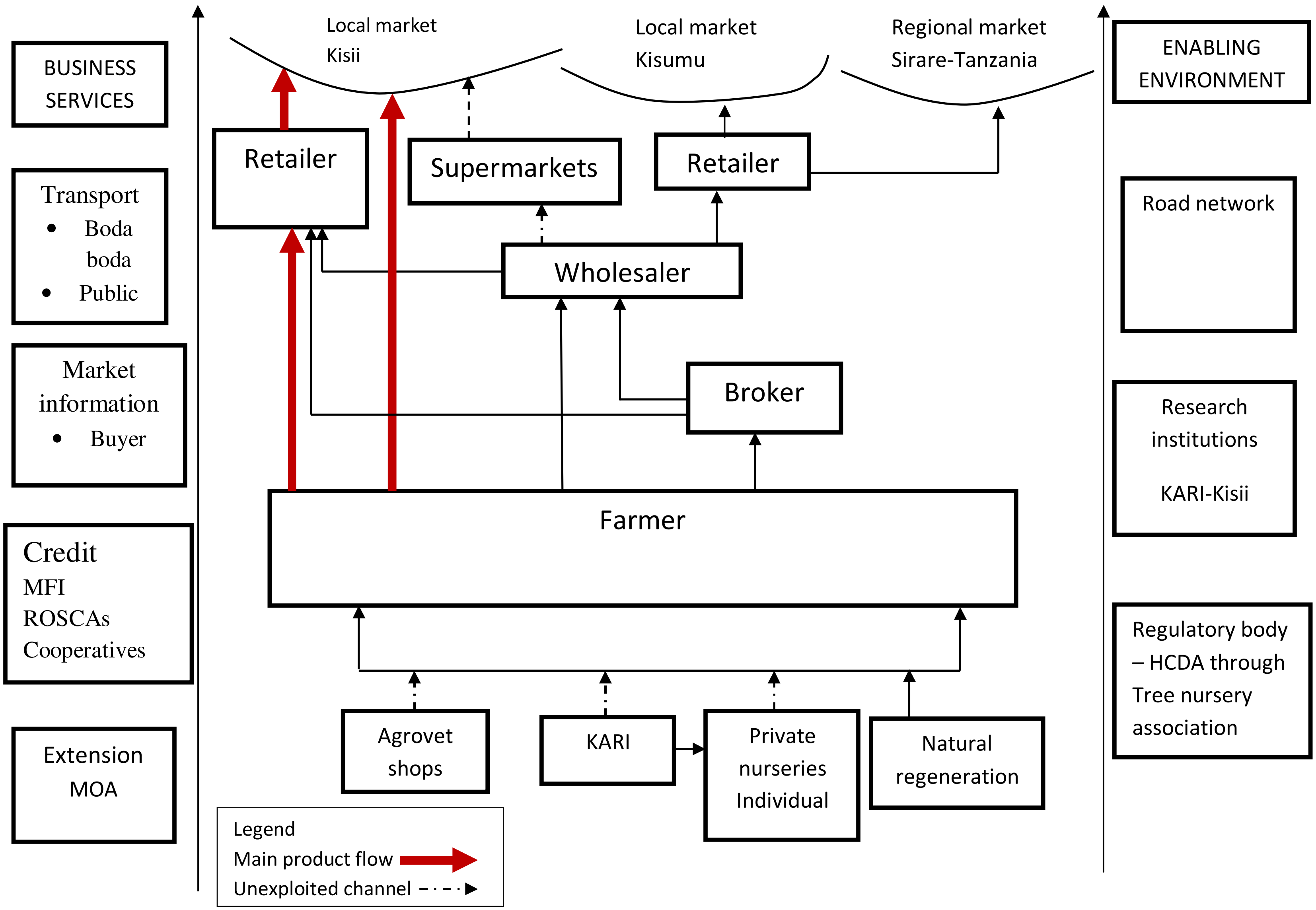


Figure 3. Avocado Value Chain Map for Marani

Indigenous chicken

The indigenous poultry value chain maps in Bomet and Mwala are shown in Figures 4 and 5, respectively. Indigenous poultry producers in the study sites were typical small-scale farmers who engaged in both crop and livestock farming. A number of actors are involved in the marketing of poultry and poultry products between the farm and the final consumer in the two districts. These include small traders/primary brokers, local market traders, secondary brokers, assemblers, hotels and consumers. Other actors comprise of suppliers of breeding stock and agro-vets. The production and marketing systems of the indigenous chicken enterprise in the two districts are highly informal and unorganized hence it is difficult to know the number of birds sold at each stage of the value chain. Figures 4 and 5 show the indigenous chicken mapping in Bomet and Mwala distrcts, respectively.

Figure 4: Bomet indigenous chicken value chain map

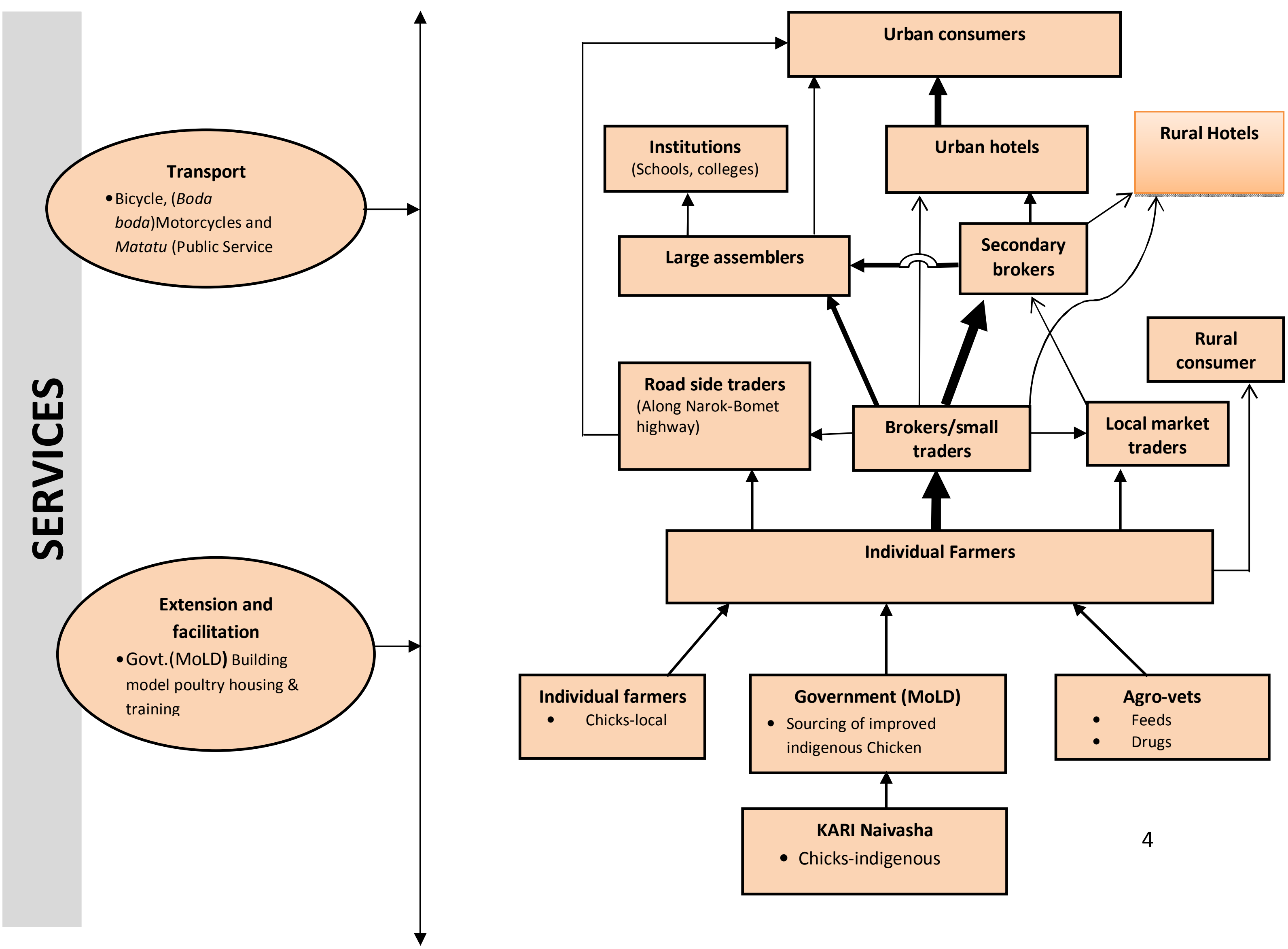
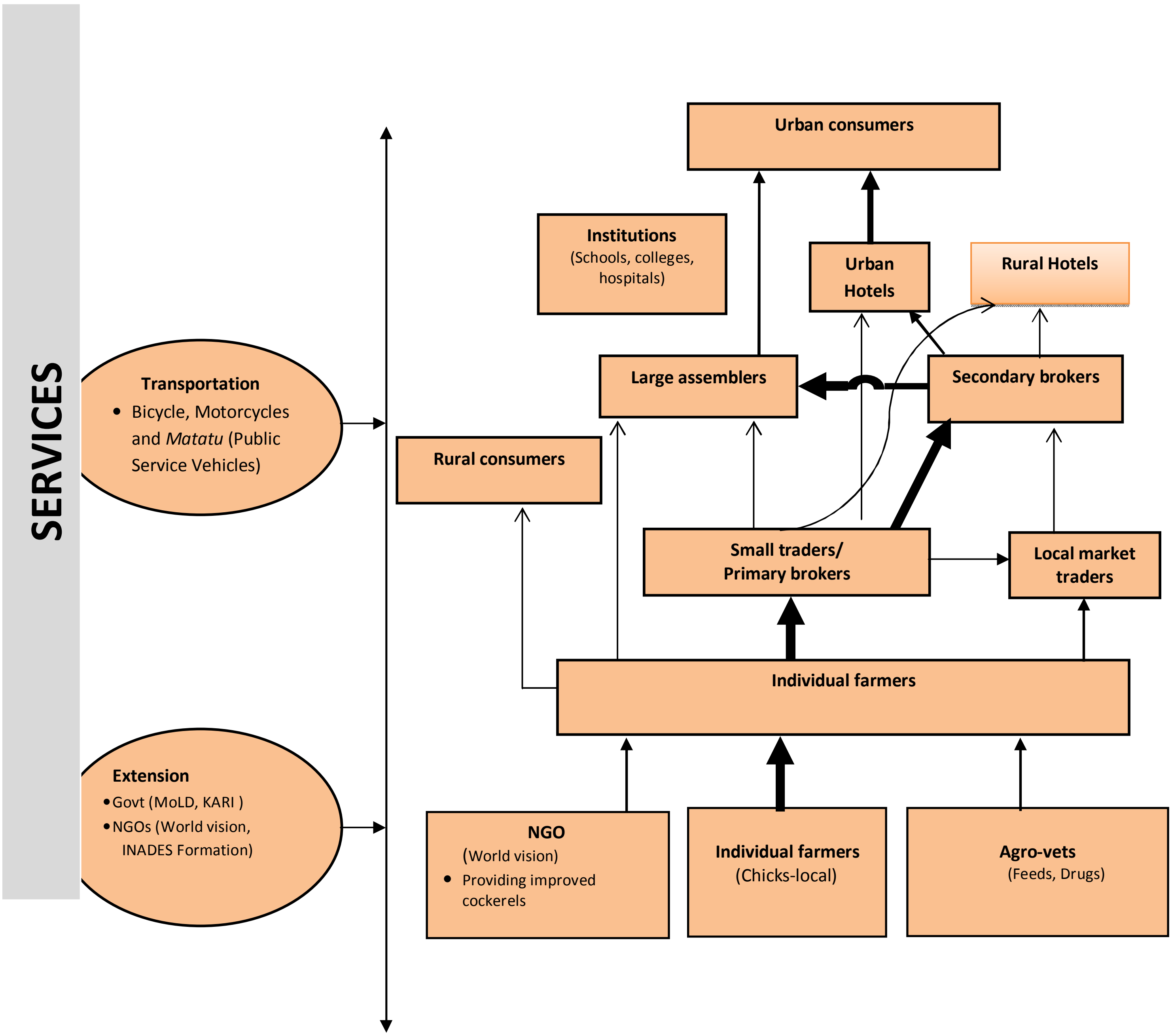


Figure 5: Mwala indigenous chicken value chain map



4 Women's participation along the value chains

Participation of women along the value chain varied greatly across the three enterprises. It was found to be very extensive in the sweet potato chain, very limited in the indigenous chicken value chain, and being somewhat in the middle of the range in the case of avocado. Table 1 summarizes women's participation in the sweet potato value chain. Within this chain, women dominated the following activities: supply of planting materials facilitated through their social networks; production, in terms of general management of the crop and supply of planting and weeding labour; and, primary and secondary trading. However, broking at the secondary market was dominated by men.

Women were involved in decision making regarding sales of sweet potatoes and use of revenue from sweet potato sales. In male headed households, these decisions were made mainly jointly by men and women (about 62%), while in female headed households, where majority of heads were widows, women naturally made the decisions (89%). In cases where women were responsible for production, decisions on use of revenue from sweet potato sales were made mainly by women and to a lesser extent, jointly by men and women. The patterns in decision making concerning sweet potato sales and revenue and dominance of women in production indicate that the commodity is substantially a woman's crop, and suggest that interventions to improve the value chain, especially at production level, holding other things constant, would benefit most women.

Table 1: Women's participation in the sweet potato value chain

Node	Women's level of participation	Activities by women
Input supply	Majority	• Multiplication and selection of vines. Women are more able to identify quality planting materials than men, and are more knowledgeable about sweet potato diseases. The existing social networks among women created through group activities help them access planting materials more easily
Production	Majority	• Women own much of the production and supply planting and weeding labour, and general management of the crop • Sweet potato is favorable to women because it provides cash for immediate needs, in addition to its importance as food.
Primary trading	Over 80 percent of primary brokers and retailers are women	• They collect the produce from the farms and sell in local trading centers and to large scale retailers • The capital outlay required for retail trading is not much
Secondary trading	About 80 percent of traders are women	• Large traders buy in larger quantities from the production area and transport for sale in the urban markets in Nairobi, Kisumu and Mombasa, while secondary retailers buy from the large traders in the urban markets and sell to terminal retailers • Because of the large capital required for large trading, the proportion of women at this node of the chain is comparatively lower • Brokers at the secondary market are men
Terminal retailing	Majority	• These buy from secondary traders and break the bulk to sell to consumers in smaller quantities

Women’s involvement in the different stages of the avocado value chain in Kandara and Marani areas is presented in Table 2. The findings suggest that where the value chain was less developed like in Marani, there was no major variation in the proportion of men and women participating in the different stages of the value chain. In Kandara, however, where the market chain for avocado was well developed and elaborate and returns were high, men were concentrated in high status, more physical, more remunerative activities along the chain, while women dominated as wage labourers in private nurseries, processing firms and export companies. Women workers were 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. Hence, majority of women were found to be concentrated in the lower end of the chain and performed unskilled manual labour.

Decisions regarding avocado sales varied by different household typologies, but were similar in the two study sites. In general, more women than men were involved in making decisions on sales in households where women were responsible for the crop (about 80%) than in households where men were responsible (about 3%). In addition, joint decision making on sales was more prevalent than sole decision making by men and women in households where men were responsible for the crop. Also, 48 percent and 55 percent of the respondents in male headed households in Kandara and Marani, respectively, reported joint decision-making on sales of avocado. Notably, joint decision making on sales was common when the avocado was of inferior grades (grades 0 and 2), but in case of avocados of premium quality (grade 1), men took a leading role in making decisions. Similarly control of proceeds from avocado appeared to follow a similar pattern as that of sales. For instance, women in both study sites were more likely to control proceeds from avocado if they came from households where they were responsible for the crop than where men were responsible. In male headed households, fewer women had control of revenue from avocado particularly in Kandara where the proportion of women controlling revenue was 5 percent compared to 20 percent in Marani. Likewise, joint decision making on proceeds from avocado was more prevalent in the two sites than individual decision making, particularly in male headed households where men were responsible for avocado production.

Table 2: Women's Participation in Stages of the Avocado Value Chain

Node	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	• Slightly 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	• 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.	

Participation of women in the indigenous chicken value chain is outlined in Table 3. Women were involved in the value chain predominantly as producers. In over 80 percent of the interviewed households, women were responsible for the enterprise and undertook most of the production related activities except for construction and repair of poultry housing structures. They were also primarily responsible for farm-gate sales of chicken. However, women's participation in other stages of the chain was minimal, thus relegating them to the lower end of the chain.

In addition to production, women were involved in decision-making regarding sale of chicken and use of revenue from chicken sales. In male-headed households, these decisions were made jointly by men and women (about 65%), while in female headed households, women overwhelmingly made sale decisions (about 90%). Also, where women were responsible for production of indigenous chicken, decisions on use of revenue were largely done jointly by both men and women (53%) and women (38%) separately.

Table 3: Women's participation in indigenous chicken value chain

Activity	Level of participation	Activities by women
Production	Majority	• Sourcing for breeding stocking. Women have good knowledge regarding selection of breeding stock and have better networks than men which help them to get the right information and chicken with desirable qualities • General management of the enterprise i.e. production-related activities (feeding, cleaning the chicken houses etc) • This is attractive for women because indigenous chicken production has low input requirements in terms of land and capital, and women are often more resource constrained compared to men • It is also a source of cash for immediate daily needs, and women need no permission to sell chicken to meet these needs • Women are able to tend to the chicken alongside routine domestic chores
Farm-gate sales	Majority	• Sell chicken to small traders or the village brokers at the farm-gate • These brokers are locals whom women can easily call and interact with • It is also time saving as it does not involve moving out of the homestead • Women are involved in decisions on sale of chicken and use of revenue from sales

Primary trading	None	• This involves aggregating chicken from farmers and entails moving from household to household to source for chicken, often travelling long distances using bicycles and public transport
		• Traders also sell chicken to hotels and other traders in local markets
		• Women are hardly involved in trading beyond the farm gate for various reasons:
		  o Time demand from domestic chores, which limits participation since trading is time consuming and tedious, and restricts women's mobility especially for long-distance travels
		  o Trading can be aggressive and competitive especially among small traders/brokers
		  o Unfriendly transport means; use of bicycles to source for birds not convenient for women
		  o Social constraints that limit people with whom women can interact; spouses reluctant to allow women to be away from home for extended time periods and interact with the more prevalent male traders

Secondary trading	Minority	• Trading here involves bringing chicken to the major regional markets and selling them directly to large assemblers or through the secondary market traders who are the main link between the large assemblers and other sellers in this market • Very few women are involved due to time and capital constraints
Terminal markets	Minority	• At the terminal or end markets, traders buy chicken from secondary traders or large assemblers and sell them to consumers in different estates and other outlets • Very few women are found at this node of the value chain

4 Opportunities for growth along the value chains

Findings show that several opportunities exist along the three value chains, which could be harnessed to enhance the participation of women in the value chains. Such opportunities include unmet demand for sweet potatoes and indigenous chicken in the domestic market and avocado in both domestic and international markets. This arises from increased awareness among local and international consumers about nutritional and health benefits of these products, and consumer shifts in preferences for organic products such as the virgin avocado oil. In addition, there exists potential for value addition for products from the three enterprises. Appropriate value addition technologies will enhance the attractiveness and usefulness of the different value chains as sources of income, employment and good nutrition. For sweet potatoes, value addition is only elementary (cleaning, sorting and grading), and there is need to explore feasibility of establishing commercial processing of sweet potatoes, which has the potential of expanding into high value market for the produce, and address problems of glut and low producer prices. Sweet potato flour and puree could be used in bakeries to partially substitute for wheat, an innovation that is already taking place in Rwanda where the orange-fleshed sweet potato (OFSP) is used in bread, cakes and biscuits. This is an opportunity that can be tapped by women sweet potato growers in Kenya. In the case of indigenous chicken, establishment of slaughter slabs would enable traders add value through slaughtering and dressing, and thus meet needs of urban consumers who prefer readily dressed chicken. Avocado processing into oil is already taking place and provides an opportunity for farmers and traders to sell Grade 2 avocados, which are not suitable for export or sale in the domestic fresh fruit markets. However, there are limited value addition options for the local avocado variety since it is not suitable for processing into juices and oil as is common with Fuerte and Hass varieties. In addition, there is unexploited potential in the processing end of the chain because of shortage of supply of the preferred Hass variety. This channel can be explored by farmers and traders in Kandara that are already dealing in the two varieties, and for farmers in Marani, replacement of the local varieties with Hass so as to take advantage of existing opportunities in domestic and international markets, is critical.

From the aforementioned, it is clear that in the case of sweet potato and avocado, opportunities exist in terms of producing varieties that are demanded by the market. For instance, the OFSP is an important source of Vitamin A, especially for children below 5 years, pregnant mothers and the sick, which is being delivered through bio-fortification. With bio-fortification having become a government policy lately, the OFSP presents an opportunity to farmers due to its wide range of applications and existing huge utilization potential especially as an ingredient for food fortification. In the case of avocadoes, there is unmet demand for more of the Hass variety, and farmers producing local varieties in Marani could be encouraged to replace those with low back grafted Hass varieties that were developed for land scarce regions such as Marani.

It is also clear that there are a number of initiatives by government, umbrella farmer organizations and other stakeholders geared towards promotion of the three enterprises in a variety of ways. Such initiatives include training in production and management, as well as in market requirements and certification of standards such as the GlobalGap, which enhance productivity and quality of products that enter the market. The support and goodwill by the government for the traditional high value crops provides an opportunity for addressing especially infrastructural and policy regulatory constraints along the value chains. The support through these initiatives is an indication of the potential for growth in the chains, and synergies by stakeholders may be harnessed for greater impact including increasing employment opportunities for women in areas where they have competitive advantage along the chains.

In all the study sites, existence of farmer groups is yet another opportunity that could be harnessed by processors, traders and exporters to improve the quality of products delivered to the markets and reduce bulking costs. Most of the actors reported that high costs of bulking deter them from purchasing products directly from individual farmers. In addition, these existing groups that focus on other enterprises such as maize or table banking may be used as a platform to promote collective action around marketing of sweet potato, avocado and indigenous chicken, and provision of production and marketing facilitative services such as training on certification standards in the case of avocado, and pooling resources for chicken vaccines and hiring services such as spraying and picking of avocadoes. Collective action will also improve producer bargaining power and economies of scale. However, for the groups to be effective and foster cohesion, they need to be professionally managed, and guided through by-laws that are market-led.

Availability of clean planting material is an opportunity farmers can exploit to boost production. For instance, grafted and certified avocado seedlings are available through institutions and individual nursery operators certified by the Horticultural Crops Development Authority (HCDA). In the case of sweet potatoes, the Kenya Agricultural Research Institute (KARI), and the Anglican Development Services (ADS) and the Kenya Horticultural Competitiveness Project (KHCP) funded by the United States Agency for International Development (USAID), have been a source of clean planting material.

In the avocado value chain, some exporters are planning to enter into contracts with farmers as out growers in order to improve production and quality of the Hass variety. This opportunity can be tapped by smallholder farmers who are likely to benefit from the initiative if they enter into contracts directly with buyers. Majority of farmers reported in the focus group discussions that they would prefer to deal directly with buyers than through an intermediary such as the Avocado Growers Association of Kenya (AGAK) because of bureaucracy, which resulted in information asymmetry and mistrust of group officials and buyers by the farmers. However, such arrangements need to be accompanied by clear terms and conditions, which should be known to buyers and sellers, and would work effectively where a traceability system is in place.

Overall, exploiting the aforementioned opportunities will require concerted efforts by different stakeholders doing different things but towards a common goal of making the value chains work better for the actors, and particularly women.

5 Conclusion and recommendations

This study has revealed strengths and opportunities, which if harnessed have the potential to integrate women more in the sweet potato, avocado and indigenous chicken value chains, and improve their welfare through potential benefits from the improved value chains. However, the strengths and opportunities along the value chains exist alongside weaknesses which need to be addressed in efforts to make the value chains work better for the benefit of the players, particularly women.

In the case of sweet potato production, it is important to ensure adequate supply of clean planting material, appropriate agronomic practices, and access to irrigation and affordable capital or credit for production that will enable women to engage in production, supply the market and derive benefits from participating in the markets. Collective marketing among producers needs to be strengthened to improve their bargaining power to be able to negotiate for better terms regarding produce grading and pricing. There is need to enforce the law on packaging and sale of sweet potatoes in standard units (the Local Government Act (Cap. 265) published in the Legal Notice No. 113 of 2008) of 98 kg instead of extended bags of up to 130 kg, which disadvantage producers, most of whom are women. Also, existence of cartels of brokers in the major markets in urban centers is a problem that needs to be addressed since it results in opportunistic behavior and inhibits competition. Greater value addition needs to be promoted in order to allow expansion into high value markets for the produce and address problems of glut and low producer prices for sweet potatoes in the market.

In order to integrate women better into the avocado value chain and especially at the upper end of the chain, it is critical to tackle challenges of high incidence of pests and diseases, low prices and stringent food safety standards in the export market. Hence, it is important to explore ways of providing interlinked services like spraying, harvesting, and grading, coupled with prompt payment of the proceeds and training of women in 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. However, these interventions need to be coupled with contracts with clear terms including grading and prices of the produce to avoid mistrust, reduce producers' vulnerability to exploitation, and smoothen trade. Also, it is important to sensitize farmers on availability of improved avocado varieties as well as training them on good agricultural practices to improve production and returns.

Indigenous poultry production was found not to be commercially oriented in the study sites, and therefore, its contribution to household income was minimal. This was attributed to a number of challenges. The major challenge relate weak production node characterized by small flock sizes reared in a low-input free range production system. Other constraints at the production level include high disease incidence and chicken mortality; high cost of feeds; limited supplementary feeding; predation due to lack of proper housing structures; little or no bargaining power for producers, hence low producer prices; and, high cost of transport to markets. The major constraints identified among traders include: poultry disease outbreaks which affect supply of birds; high transport costs due to poor road infrastructure and long travels; inconsistent and low supplies due to small flock sizes; and, lack of capital or affordable credit services to expand business.

In order to enhance participation of women in agricultural commodity markets, it is important to deal with the outlined challenges. This will enhance their ability and capacity to exploit the various identified opportunities along the three value chains, particularly in areas, where women have a comparative advantage.