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GENDER GAPS IN THE LEVELS OF PARTICIPATION IN IMPROVED BEE KEEPING: CASE OF THE *MAASAI* COMMUNITY IN TRANS MARA, NAROK COUNTY, KENYA

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Abstract

Purpose: This study sought to explore gender gaps in levels of participation in improved bee keeping among the *Maasai* community in Trans Mara, Narok County.

Methodology: The study used an investigative survey design with a mixed method approach. Through stratified random sampling, 180 respondents were interviewed for household surveys, 16 key informants (KII), and four (4) focus groups discussions (FGDs), comprising of 36 participants. Structured and Semi-structured interviews with closed and open ended questions were used to collect both qualitative and quantitative data based on research objectives. An interview guide was used to collect information from participants in FGDs and interview schedules for KIIs. The data collected was analysed using SPSS and excel spreadsheet.

Findings: The study found women are actively involved in bee keeping but their participation in accessing improved equipment, trainings and income from honey is low in comparison to men's. This is mainly due to challenges in access to capital, gender related factors such as mobility, time, and cultural perceptions, issues which affect women more than men. This is despite the fact that women are new in bee keeping thus, their need for capital, including moral support, is greater than men's.

Unique Contribution to Theory, Practice and Policy: The study recommends corroboration of improved bee keeping projects, ministry of agriculture, research institutions and county government in order to formulate gender responsive strategies that can enhance participation in the value chain as well as service delivery to producers. For example, men and women who own improved equipment can be encouraged to share with those without, enhancement of collective action especially in purchase of improved equipment and sourcing for better markets.

Keywords: *Improved Bee Keeping, Participation, Gender, Trans Mara, Narok County, Kenya.*

1.0 INTRODUCTION

Literature has provided some evidence on relations between gender and livestock production (Herath 2007; Deshingkar *et al*., 2008; Flintan 2008), however, Herrero *et al*. (2010) argue that there is scarcity of information on this subject, especially if the global demand for animal products in coming decades is to be met. Developing agricultural value chains is an important approach to increasing incomes of small and medium producers including economically active poor farmers (Agri-Pro Focus, 2012). However, gender relations remain central to discussions on value chains and their potential for economic empowerment. Laven and Verhart (2011) argue that women have a lower access to resources than men and they also experience other social economic and gender barriers. Consequently, their participation is limited to the nodes of the chains with lower profits.

Over the past decade, beekeeping is emerging as a successful area of livestock production for rural people in developing countries, mainly due to its economic benefits from the products (Kugonza, 2009). According to Tabinda *et al*., (2013), improved bee keeping projects in Pakistan are playing a major role in empowering small-scale farmers through modern ways hence, rural women are generating income from the enterprise. King (2013) shows that beekeeping and honey production in Ethiopia has been a male occupation. However, over the last decade, improved hives have enabled participation of unmarried women and youth in Collective Action (CA) and as a result, they are able to access and benefit from the enterprise. In contrast to Ethiopia findings, in Mali and Tanzania, older and married women were the ones participating in CA activities. Nevertheless, women are still confined to their gender roles; that is feeding bees as well as washing and handling utensils. Ironically, this is termed as participation, yet it increases their workload eventually thereby, burdening them further instead of uplifting their standards of living.

According to Matanmi (2008), beekeeping technology in Nigeria can easily be embarked on by small holder farmers. Its investment is low; it does not require large area of land and there is no need for daily care. Consequently, women and youth, who are constrained by access to land, as well as time due to triple roles of the former, can easily participate. Mujuni (2012) indicates that in Uganda, small holder farmers do generate income from beekeeping. Nevertheless, it is estimated that Uganda produces only 1% of the national annual production potential estimated to be 500,000 tons, a scenario attributed to lack of understanding the improved methods of the enterprise. This may impact negatively to the vulnerable due to findings by Mujuni (2012), that factors affecting adoption of improved bee keeping include lack of information and cost of technology which constraint women and youth more than men.

In Kenya, beekeeping is well established. The industry harbours a great potential for increasing incomes and supportive sustainable development. Indirectly, it contributes to employment creation in pharmaceutical, brewing, cosmetics and other service providers such as retailers, transporters and suppliers of packaging materials (GOK, 2011). An earlier study by Carroll (2006) shows that there is increase in demand for honey in Kenya. Informally, Carroll indicates that 75% which is sold in most supermarkets is imported from Australia. Likewise, despite numerous advantages that can be realized, the sector remains largely underdeveloped. This is due to the fact that in many parts of the country, it is still carried out as an indigenous activity by men mostly passed down through generations irrespective of the new technology in its production. On

the other hand, since the enterprise is a male domain, it is men who mostly inherit it. As a result, women continue to be vulnerable. PACT Kenya (2010) in Mswambeni confirms that improved bee keeping is mainly dominated by men. According to Sitati and Bett (2012), many projects that engage in beekeeping are poorly planned and their rapid expansion usually result in many un-colonised bee hives which leaves new comers, majority who are women and youth, often making losses. Such a move in turn impacts negatively on income generation and food security, and certainly has some adverse gender effects not only on women but also the whole community.

The country's potential for apiculture development is estimated at over 100,000 tons of honey and 10,000 tons beeswax. Unfortunately, only a fifth of this potential is being exploited (GOK, 2010). This could be partly due to the findings by Sitati and Bett (2012) that most apiaries are poorly managed and the local community lack capacity, causing poor occupation that leads to low honey production. This has impacted more on women and youth who are new in the enterprise. Despite the drawbacks, improved beekeeping has many advantages hence, compatible with the vulnerable farmers' needs. Consequently, it builds a case for promoting participation of all genders, and this is why this study explored the gender gaps in participation levels in improved bee keeping among the *Maasai* community in Trans Mara, with an aim of making it gender responsive for a meaningful development and food security. The study was responding to the following objectives:

1. To assess the level of participation in access to improved bee keeping equipment
2. To identify the level of participation in access to value addition and marketing channels
3. To explore the level of participation in access to land title deeds as a collateral for credit

2.0 LITERATURE REVIEW

Earlier studies by FAO (1990) specify that in several places in East Africa, beekeeping was associated with witchcraft. Young men did not participate, and beekeeping was considered to be an occupation of old people in the society. IFAD (2008) shows that in Rwanda, both women's and youth's participation is low; out of 30,293 beekeepers, 61% were men, 24% women and 15% youth. Although some of these studies were done more than two decades ago, the situation has not changed in the improved enterprise. For example in Uganda, a study by Mujuni (2012) in Bushenyi District showed that majority (95%) of bee keeping farmers were male and majority, (more than 75%), were 30 years and above. Similar findings have been recorded in Kenya; (PACT Kenya, 2011); and in Ethiopia, (King, 2013).

The studies above show that gender and age are critical if beekeeping is expected to improve a community's economic livelihoods. This study therefore sought to find out if women and youth are participating in improved bee keeping and also benefiting from it, especially in access to improved equipment and income from bee products. For instance, IFAD (2008) indicates that while elderly men are inclined to income, the young entrepreneurs and women would, with a little sensitization and training be focused on "profits" rather than income. A profit oriented mind-set would thus seek to assess the level of input vis-à-vis the realized benefits which would trigger members to develop the enterprise hence, make it economically viable. Consequently, this is not attainable if participation of women and youth remains low in improved bee keeping and this is what this study explored and suggested the way forward. Several studies have shown

that improved bee keeping is an important enterprise that can be carried out by youth and women. For example, an earlier study by Mutai and Kedowa (2006) in Kericho District, Kenya, states that improved bee keeping is an ideal activity for youth as they don't require access to land to carry out the enterprise. This is because it productively occupies and teaches them a respect for, and an understanding of their local environment. According to Martin *et al*., (2012) bee keeping technology methods are being impacted to young people by small holder farmers in various communities. In some instances bee farmers visit local schools and give practical demonstrations to students.

A study by Ndungo *et al.* (2011) shows that in Kenya, honey was traditionally used in beer brewing and paying dowry, all which fall under the men's domain. However, improved bee keeping means that both genders are involved in the sector. This study validates these findings, especially the fact that women and youth can comfortably participate in improved bee keeping. It needs less land and does not require excessive labour and time to manage, as bees do most work, characteristics that are compatible with needs and constraints of resource resource-poor, majority who are women. The scholars did not however explore women's, and men's participation levels, and this is what this study sought to find out. According to PACT Kenya (2010), bee keeping in Mombasa is mainly dominated by males who are mostly involved in production, baiting, hanging hives and a little bit of female participation in processing. Unlike men who practice it as individuals, women practice it in groups of mixed gender. This is because most activities are carried out by males hence, they have to hire labor for most bee keeping activities. As a result, they incur average production costs that are higher than men's. PACK Kenya did not assess why individual ownership of improved equipment is low for women and this is what this study assessed.

According to King (2013), beekeeping in Ethiopia has been a male occupation partly because harvesting honey from traditional hives required climbing trees which is not socially acceptable for women. Over the last decade, the improved hives have enabled the vulnerable to participate and as a result, younger and unmarried women are involved and benefiting from collective action (CA). In contrast to Ethiopia, in Mali and Tanzania it was older and married women who were more able to participate in CA activities. King (2013) shows that in Ethiopia, women's role in beekeeping technology include feeding bees, washing utensils, preparation and handling smoke, harvesting and storing honey, caring for absconding bee colonies and making honey products, such as *tej* (kind of local brew). Sometimes marketing honey is also conducted by women, because 'trading' activities are traditionally considered a woman's job, except when long distance travel is involved. This has increased women's access to income and control over productive resources. However, King notes that a critical gap identified is that participation of women decreases along the chain towards the higher levels where value is added significantly. King's findings validate this study's results concerning decrease in women's participation at the nodes of the chain where value is high. Nevertheless, he did not explore the reasons contributing to these gaps and this is what this study sought to find out and suggest the way forward. Tabinda *et al*. (2013) indicates that in Pakistan, men's activities include colony replacement, honey extraction and queen rearing while women are involved in supplement feeding, grading and packing. According to Martin *et al*., (2012), in many countries, women bee keepers face cultural and social barriers that do not allow them to participate actively in commercialization of what

they produce and in other instances, it is used for male–based recreational activities, such as brewing honey beer. This hampers all attempts to improve production skills, competencies and know-how as well as in marketing bee products.

A study by PACT Kenya (2010) in Mombasa, shows that culture does not allow women in bee keeping due to their biological cycle and the fact that some men restrict their wives from joining beekeeping groups for fear they will engage in infidelity. According to Mujuni (2012), majority of Ugandan men still hold onto tradition of keeping women out of most men's activities. This calls for the need to blend culture to increase women's participation in beekeeping. Mujuni's findings corroborates this study's. However, the scholars did not explore how cultural perceptions affect women's participation in improved bee keeping. According to Mujuni (2012, the factors affecting adoption of beekeeping technology in Uganda includes fear of bee stings, starting capital (to buy improved equipment), and lack of land on which to set the apiary for the safety of the neighbouring environment. Other factors include lack of information and cost of technology. This study explored how capital constraint impact to both genders.

3.0 METHODOLOGY

Study Area and Design

The study used an investigative survey design. To enrich the investigation, a mixed method approach was most suitable. It provided data collection through in-depth interviews from KIs and FGDs thus, both qualitative and quantitative in nature. The study was conducted in Trans Mara, Narok County, Kenya. The choice of Trans Mara was based on what emanated from a three month scoping study whose stakeholders had met in Kenya Agricultural Research Institute (KARI), Nairobi, in 2009 (Miruka, 2009). They agreed that bee keeping was one of the five commodities among (Banana, African leafy vegetables, Passion fruits, and Indigenous chickens), that are best placed for increased incomes and food security for resource poor farmers, especially women. The aim was to understand mechanisms for development of gender responsive value chains. Trans Mara was selected as the site to transfer improved bee keeping which has been practiced traditionally for a long time in the area. The target population comprised of farmers who were members in improved bee keeping groups in the study area between 2010 and 2015.

Sampling Procedure

Stratified random sampling was used for the household surveys, key informants and focus group discussions. This being a gender study, it was the best suited procedure. The list of men and women in improved bee keeping groups (632) was obtained from Oral Informant (O.I) Stanley Bett who assisted in selecting the respondents. The study targeted all the 632 bee keepers who were clustered into the divisions. A total of 180 respondents were selected for the household survey translating into 28% of the targeted population (632), as represented in Table 1.

Table 1: Sample Composition of Household Survey

	Female HH	Men in MHH	Women in MHH	Youths	Total	Target	% of target
Lolgorian	11	23	22	22	78	275	28
Angata	8	17	16	16	57	200	29
Kirdon	5	10	10	8	33	112	29
Kilgoris	1	3	4	4	12	45	27
Total	25	53	52	50	180	632	28

For key informant interviews, 16 men and women were selected from group leaders, bee products retailers, KARLO officers and agricultural officers. Efforts were made to categorize group leaders into clusters of chairpersons, secretaries and treasurers and through a list provided by a key informant, 10 respondents were selected. The study further randomly selected 2 county agricultural officers. Convenience sampling was used to select 2 bee product retailers (Table 2).

Table 2: Sampled Composition of Key Informants

	Male	Female	Total
County agricultural officers	1	1	2
Bee keeping group leaders	5	5	10
Bee products retailers	1	1	2
KARLO officers	2	0	2
Total	9	7	16

Stratified random sampling was used to select 36 farmers who were participating in improved bee keeping groups between 2009 and 2015 to participate in FGDs. Efforts were made to ensure gender and age was taken care of. The names of all 32 improved bee keeping groups were clustered into categories of; mixed-gender, same-gender and youth. From each cluster, the groups were written on papers; each was given a number, cut and rolled, then 4 were randomly selected, 1 mixed-gender, 2 same-gender and youth group. This gave every group an equal and independent chance of selection. The same procedure was repeated to select persons to participate in FGDs; this time from the 4 sampled groups. Table 3.

Table 3: Sampled Composition of Focus Group Discussions

	Male	Female	Number of participants
Bidii Torch group	8	0	8
Kaptigei widows group	0	10	10
Naratisho women group	0	9	9
Oreteti youth group	7	2	9
Total participants	15	21	36

Data Collection Methods, Processing and Analysis

For household survey, structured and semi-structured interviews were used to collect qualitative and quantitative data based on research objectives. This was a guided interview which provided an opportunity for further probing and collection of sufficient information. A FGD guide with open ended questions was used to collect information from participants in group discussions. They were administered using *Maasai* language to enable participants understand and respond

efficiently. An interpreter who understood both English/or *Swahili* including *Maasai* languages was utilised and the sessions were documented in notebooks. Interview schedules with open ended questions were used for KIIs. Secondary data on bee keeping was also collected from Kenya Agricultural and Livestock Research Organisation (KALRO) Trans Mara, which has a component that trains bee farmers in the area. Quantitative data was processed through manual cleaning, edited and coded. It was followed by data entry and then analysed using descriptive statistics in SPSS computer software version 20 and excel spread sheet. Qualitative data was processed by cleaning it manually through identification of main themes from in-depth interviews. It was then classified as per the study objectives. Excel spreadsheet was used for further data interpretation. Results were then presented in form of lists, frequency tables, percentages and charts.

4.0 RESULTS AND DISCUSSIONS

Age and education level are important variables in any commercial enterprise. Thus, the study assessed the two.

4.1 Age of Respondents

Results revealed that out of 180 respondents, majority 120 (66.7%) were below 37 years. This is further affirmed in Table 4. Improved bee keeping was introduced in Trans Mara in 2010; 5 years later by the time of the study (2015). To understand participation before, and after introduction, the study sought to explore the trends in more than a decade. This was achieved by categorizing respondents in three levels, those who started bee keeping when the technology was introduced (less than 5 years by the time of the study), between 5 to 10 years earlier and more than 10 years earlier (Table 4).

Table 4: Bee Keeping Trends by Gender and Age (%)

	Gender		Age		
Years	Male	Female	21-35	36- 45	46 - 55
Less than 5	33	27	34.5	28.2	13
5 to 10	43	59	55.6	52.5	34.8
More than 10	24	14	9.9	19.3	52.2
Total	100	100	100	100	100

Findings reveal that in more than a decade before the introduction of the technology, there were more men (24%) compared to women (14%) who were keeping bees and majority were above 46 years (52%). However, between the periods of 5 to 10 years, more women (59%), in comparison to men (43%), have joined the enterprise and majority are below 45 years. This can be attributed to the fact that bee keeping was traditionally perceived as a male domain but after introduction of the improved enterprise, women and youth started participating. Further, the findings illustrate a shift from the belief that bee keeping is only for the elderly. King (2013) affirms that over the last decade, improved hives enabled participation of younger persons. Youth are constrained by access to land and this has contributed largely to their lack of participation in crop agriculture. There is therefore need to include them in strategies developed for improved bee keeping. The study noted most of them are using extra income to educate themselves, a positive indication for the socio-economic development of the country as stipulated in vision 2030.

4.2 Levels of Education

In bee keeping, education is crucial especially as it shifts into commercial enterprise. Men and women require basic knowledge in transacting business which is supported by Mujuni (2012) that education enhances acceptance of improved technologies since it facilitates farmers' adoption of innovations.

Results showed that though most respondents could read and write, more women (68.2%) in comparison to men (31.8%) had no formal education, indicating that the former are generally less educated than the latter in the study area. Consequently, it has a negative impact on the socio-economic welfare of the area considering the fact that all genders are participating in the enterprise. The study noted that some women aged 18 lacked basic knowledge as little as writing their names, a scenario attributed to the conservative culture of the *Maasai* community that equates women with wealth. As a result, many are married off as teenagers which further widens the gender gap in access to knowledge which is vital for any commercial undertaking, improved bee keeping included.

4.3 Participation in Access to Improved Bee Keeping Equipment

This was achieved by assessing the percentage of men and women who had access to and control of improved equipment. The study sought to specify indicators as high; medium; and low. This was informed by the number of respondents (180), and thus, 70% and above of 180 was quantified as high; 50 to 69% of 180 as medium; and 49% and below of 180 as low. This is distributed in Table 5.

Table 5: Levels of Participation Indicators

Number of respondents (180)	Percentage	Indicator
126 and above	70 and above	High
90 to 125	50 to 69	Medium
88 and below	49 and below	Low

Source: Study indicators

4.3.1 Access to Improved Hives

Improved hives have many advantages compared to traditional ones. They yield higher and are long lasting due to their high quality materials, including the fact that they are not placed in tall trees, hence favourable to all genders. The study sought to explore their access through evaluation of the total number owned by an individual (Figure 1).

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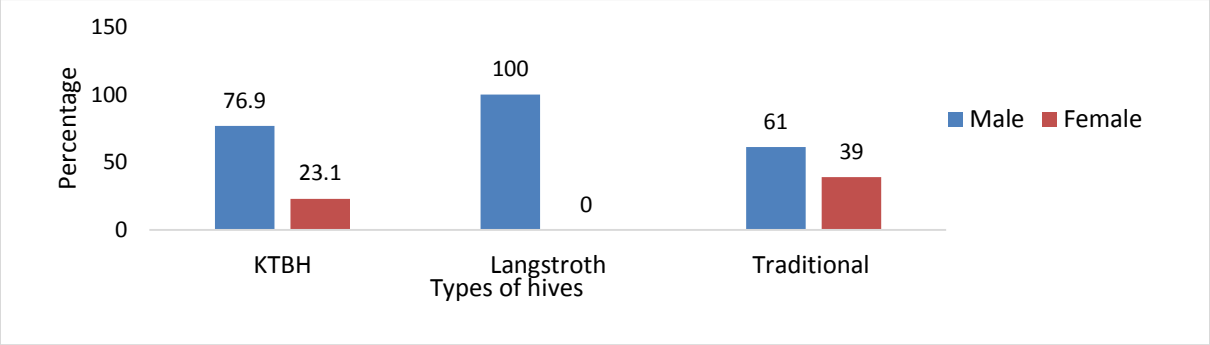

Figure 1: Access to Improved Hives by Gender

Analysis reveal that a high percentage of men (76.9%) in comparison to women (23.1%), own KTBH. Notably, no woman owned langstroth as all are possessed by men, a scenario showing vulnerability of women at this stage despite the fact that they are amateurs in the business. Access to improved equipment such as hives determine the value in latter stages because they yield more than traditional ones hence, extra income. This negates the intention of improved bee keeping which was to increase household income and raise the living standards among *Maasai* community.

The findings above further corroborates what the study noted that improved hives are owned in groups while individual possession is very low especially among women. According to O.I. Bett (22/12/2015), men in the study area own large herds of livestock. As such, income is not a problem so they are more privileged in purchasing the improved equipment compared to women.

These results show persistence of inequalities in access to productive assets especially during transfer of development interventions among resource-poor men and women. This is mainly as a result of policies and projects who still fail to consider the basic questions concerning the gender differences in availability of resources, roles, challenges, and how these differences might be relevant to various proposed interventions. Consequently, as Tripathi *et al*. (2012) argues, it is often assumed that technologies have the same impacts on men and women, when in fact, they do not. This believe has resulted to negative impacts in interventions that are intended otherwise. Similar findings by Mujuni (2012) argues that majority of Ugandan men still hold onto tradition of keeping women out of most men's activities. This calls for the need to blend culture to increase women's participation in the enterprise, and definitely, it will increase income and raise the standard of living as intended.

4.3.2 Access to Harvesting Gears and Smokers

Owning improved harvesting equipment not only increases yield and income but also protects bees from fire, and at the same time enhancing men's and women's participation especially those who fear bee stings. The study sought to document the number owned by both genders (Table 6).

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Table 6: Access to Harvesting gears a and Smokers

	Total Frequency		Male		Female		
	N	%	N	%	N	%	Total
Harvesting gears	36	20	35	97.2	1	2.8	100
Smokers	24	13.3	24	100	0	0	100

Results reveal that most of those who owned gears were men 35 (97.2%), while only one woman had it. Furthermore, no woman possessed a smoker since all the 24 owners were men. Access to harvesting equipment is low for both genders though women are more vulnerable. Consequently, just like in the case of improved hives, their level of participation is decreasing further in the nodes of the chain with high value. The smokers make harvesting easy by protecting both people and bees which also increases yield. On the other hand, traditional ways of using fire endangers the two. It is risky to the person and can kill bees. Likewise, gears increase participation to those who fear bee sting, majority who are women. For instance, Munjuni (2012) indicates that in Uganda, women were not engaging in harvesting due to fear of bee sting. These findings corroborates King (2013) who indicates that though improved bee keeping has increased access to income among women, their participation decreases towards higher levels of the chain where value is added significantly. The aim of improving bee keeping equipment was, among other reasons, to make them favourable to vulnerable farmers, majority who are women yet, they are still marginalised, a scenario that negates the interventions' goal; to increase income and raise community's living standards. This calls a commitment to gender equality during transfer which will ensure equity along the chain for enhanced participation.

4.3.3 Access to Quality Refining Equipment and Processing Skills

The study noted that refined honey is preferred by most consumers. In order to understand whether men and women in the study area were refining, the study assessed the types of honey sold (Table 6). Access to quality machines was also explored (Table 7).

Table 7: Types of Honey Sold by Men and Women

Forms of selling honey	N	% of total N	Male		Female	
			N	%	N	%
Crude	134	74.4	57	42.5	77	57.5
Semi-refined	107	59.4	66	61.7	41	38.3
Refined	75	41.7	47	62.7	28	37.3
Chunk	57	31.7	32	56.1	25	43.9
Comb	42	23.3	23	54.8	19	45.2

Findings reveal that out of 180 respondents, refined honey is sold by only 75 (41.7%), that is 47 (62.7%) men, and 28 (37.3%) women. Most bee keepers are selling it raw (crude) and semi-refined. However, though refining is limited for both genders, women are more handicapped. The study therefore sought to find out the factors that are hindering it (Figure 2).

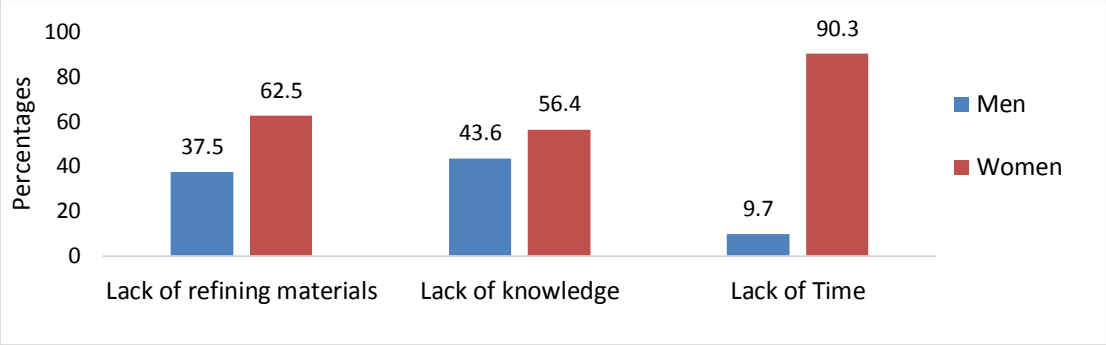


Figure 2: Factors that are Hindering Refining Honey.

Majority of women (90.3%), indicated that refining process is time consuming compared to only 9.7% men. Similarly, most women (62.5%), in comparison to men (37.5%), cited lack of refining materials. Conversely, more women 56.4%), in comparison to men (43.6%), stated lack of knowledge. Consequently, while participation in refining honey is low for both genders, women are the ones vulnerable, a scenario attributed to the prevailing gender inequalities common in many households in Africa and witnessed in Trans Mara. Among these, there is unequal gender balance in resource allocation, which, due to patriarchy, constrains women especially in access to capital. For instance, the study noted that group members who never received any training were expected to acquire the same by traveling to KALRO Trans Mara. As a result, women who live far from the demonstration plot could not be trained due to gender related factors such as lack of access to transportation fee, mobility and time. This is attributed to the interventions' failure to acknowledge women's unpaid work such as household chores, yet, it is a key contributing factor to their unique challenges in commercial farming. The study recognizes the governments' and development interventions' commitment to alleviating poverty in rural areas. However, this effort will yield positive results if they maximize the productive potential of women by promoting gender equality.

4.3.4 Access to Quality Refining Equipment

Ownership of quality refining materials increases income due to the fact that refined honey fetches higher returns compared to raw or semi-refined. The study identified access to refining equipment (Table 8).

Table 8: Access to Quality Refining Equipment

	N	% of total N	% Male	% Female
Honey press	69	79	73.3	79
Perforated plastic strainer	12	14	14.3	20
Filter tank	5	6	12.4	0
Others (e.g. boiling)	1	1	0	1
Total	87	100	100	100

Findings reveal that out of 87 respondents, majority were using honey press (smashing crude honey by use of 'kitchen stick' then passing it through locally available materials like mosquito nets to remove dirt and particles), (73.3 % men and 79% women). This shows that few men and women have access to quality refining equipment. However, more women (20%), in comparison to men (14.3%), had access to perforated plastic strainers while only the latter (12.4%), had access to filter tanks. Though access to refining equipment is low for both genders, surprisingly, women have not been left out. Their vulnerability in accessing the only filter tank in KALRO Tran Mara is a factor that has an effect on production since men are neither constrained by income nor time, both factors that facilitate traveling to KALRO Trans Mara. Considering the importance of such parameters in production process, there is need for strategies that include both genders especially during planning on how to use quality processing equipment that are limited. This will ensure both genders benefit equally from such initiatives.

Filter Tank situated at the demonstration plot in Kenya Agricultural and Livestock Research organization, Trans Mara

4.3.5 Access to Quality Packaging Materials

Improper packaging of bee products can lead to deterioration of quality hence, have an effect on proceeds resulting to low income due to customer preferences. For the few bee keepers who were refining, the study explored access to quality processing equipment (Figure 3).

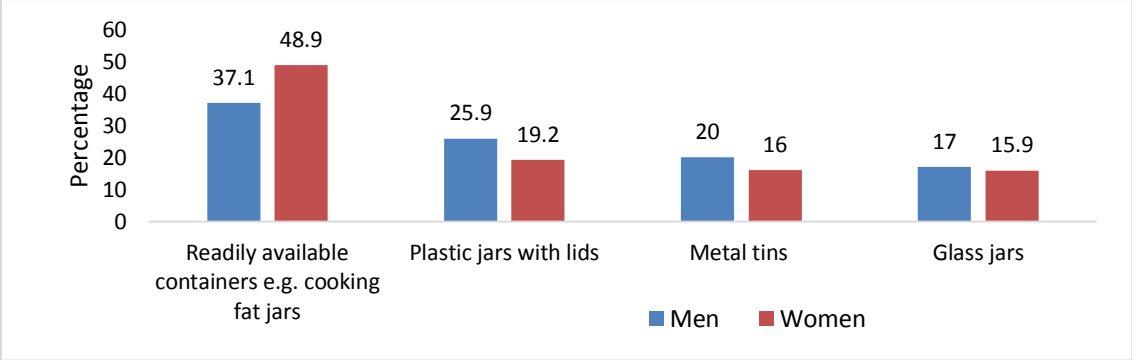
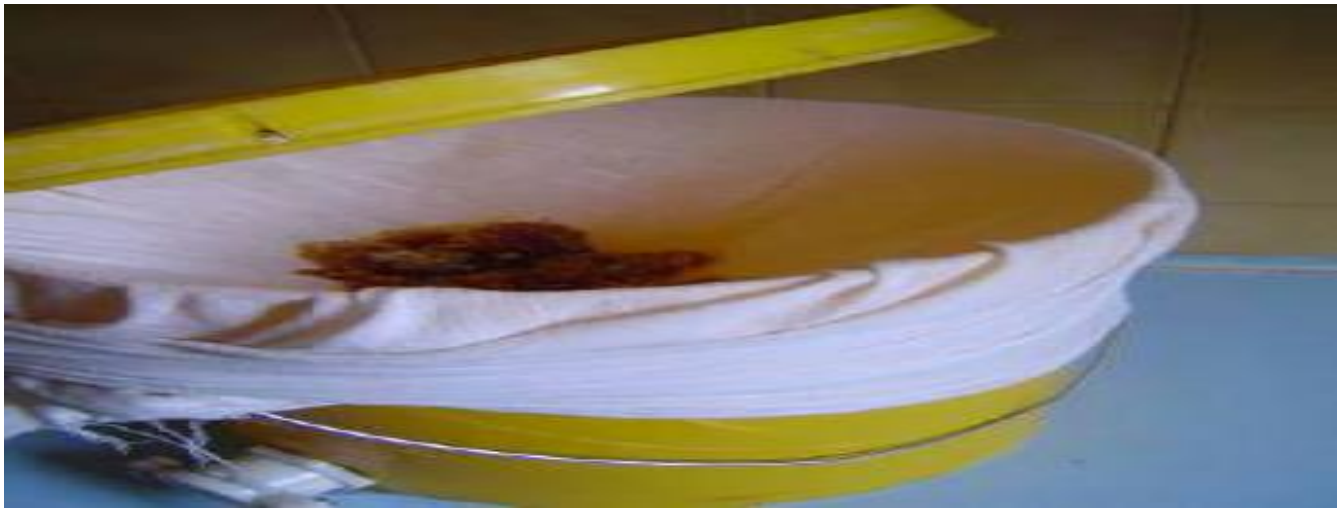


Figure 3: Materials used to Package Honey

Results show that most men and women are using readily available containers such as cooking fat jars though women (48.9%), were more compared to men (37.1%). Equally, more men (25.9%) compared to women (19.2%) had access to quality plastic jars with lids. As noted by the County Agricultural Officer (24/12/2015), most bee keepers in the study area are resource-poor hence, they cannot afford to buy quality equipment. According to O.Is Stanley and Kanda (24/12/2015), honey processing takes three major stages which require time and capital. These are:

- *Stage1: crude honey is crushed inside a container until it becomes liquid, then sieved*
- *Stage 2: semi-refined honey is mixed again then re-sieved using a perforated strainer (sieve with smaller holes than the first one).*
- *Stage 3: it is packaged in plastic containers, sealed and labelled.*

These stages show that to refine and package quality honey, a beekeeper needs to purchase several equipment besides quality time, factors that constrain resource poor men and women. This suggest that though a few are refining, purchasing necessary and quality materials constrain women more than men due to gender related challenges, key among them, income. With this in mind, there is need to form processing and marketing associations that can assist men and women bee keepers to collectively use simple but quality methods that are not expensive like the one shown in this photo



A simple honey refining method for the small scale beekeeper (Source: Carroll, 2006).

4.4 Access to Value Addition and Marketing Channels

4.4.1 Participation in Value Addition

Hive value-added products are used for various purposes such as pharmaceutical industries, food preservation, brewing, candles and polishes and they procure more income in comparison to raw materials (PAKT Kenya, 2011). The study therefore sought to understand engagement of both genders in adding value to honey bee products. Findings revealed that out of 180 respondents, only 30 (16.6%) women and 20 (11.1%) men were using bee products to make local brew indicating low participation in value addition. Unfortunately, though adding value by making brew is meant to increase profit, it has created new challenges among community members. Many respondents indicated that a number of men and women, both young and old, were perpetually drunk most part of the day.

Persons who engage in excessive uptake of local brew cannot benefit positively despite the commercial shifting of bee keeping. Not only do they possibly drink all the income earned from the enterprise, but also deviate from increased income and raised standard of living. Awareness initiatives are important especially to educate both genders on value addition that is beneficial to the community such as making candles using bees' wax which the study established, is thrown away or sold with honey

4.4.2 Access to Marketing Channels of Bee Products

Research has shown that some marketing channels offer better prices than others thus, preferable to various individuals depending on factors such as distance and accessibility. The study sought to find out both genders' participation in accessing channels that offer better prices (Table 9).

Table 9: Marketing Channels of Bee Products (%)

	N	%	Married women	Men	Single women
Middle men	133	31.8	25.4	15.4	14.3
Local Consumers	127	30.4	31.9	20	12.7
Local retail shops	76	18.2	30.7	21.1	20.1
Open air market	43	10.3	9.8	11.1	31.5
Wholesale/cooperative	39	9.3	2.2	32.4	21.4
Total	418	100	100	100	100

Analysis show that more married women (31.9%), in comparison to single ones (12.7%) and men (20%), are selling to local consumers. Conversely, many single women (31.5%), compared to men (11.1%), and married women (9.8%), are using open air markets. The study found that wholesale and cooperative channels offer better prices compared to local retail shops and open air markets. Alternatively, middle men and local consumers offer the lowest because they buy on-farm. It is observable that majority of those who have access to wholesale and cooperative outlets which are offering better prices are men and single women. The study noted that married women's autonomy, especially to travel to source for better markets is a challenge hence, can only depend on channels that are near home. Consequently, despite being more actively involved in bee keeping, it impacts negatively on them. They do not reap maximum benefits. In contrast, single women and men control their time, income and autonomy to source for markets outside home. Nevertheless, women in both types of households are constrained by reproductive roles, a fact that development interventions should take note.

This is corroborated by World Bank (2012); it is important for women to be able to negotiate terms and prices with powerful buyers but due to complex requirements within value chains, they are disadvantaged in obtaining access to new and well-paying markets. They tend to have limited experience, lower levels of education and mobility. As a result, although they may engage in marketing at varying degrees, and in many different ways, gender dynamics at household level restrict their access to more lucrative markets. Equally, Ndungo *et al*, (2011) note that while women are unable to source for better marketing opportunities, men can access long distant outlets without seeking their wives' consent and are not tied at home by gender roles. This gender gap continues to negate the impact on rural poverty and food insecurity. Addressing women's unique constraints can facilitate their participation in better markets hence, influence intra-household income management and resource allocation in their favor.

4.4. 3 Honey as an Income Generation

Results have shown that in the study area, the bee product that is readily sold is honey and noting its ranking among other commodities as an income generation assisted in understanding the levels of participation in access to, and control of income (Figures 4 and 5).

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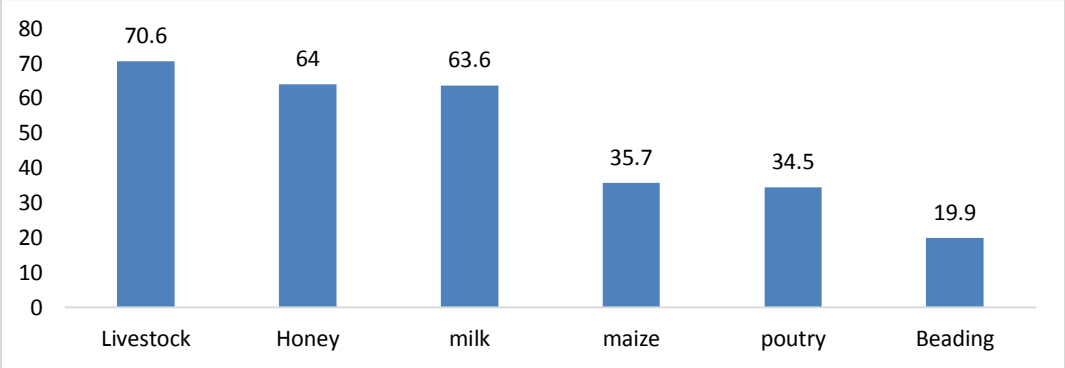

Figure 4: Honey as Income Generation by Men

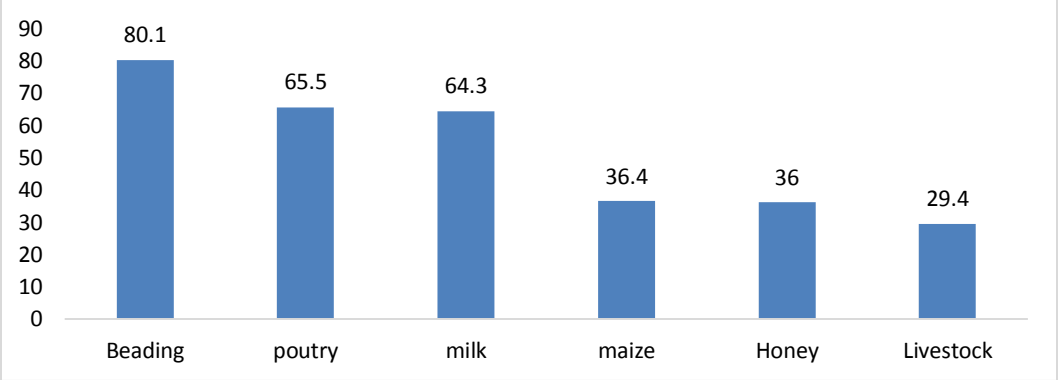

Figure 5: Honey as Income Generation by Women

Figure 4 reveals that majority of men (70.6%), ranked livestock first as an income generation commodity, then honey (64%), while milk was a close third (63.6%). Conversely, majority of women (80.1%), ranked beading first, poultry second (65.5%), and maize a close third (64.3%) (Figure 4.7). Notably, few women (36.4%), indicated they earn income from honey compared to most men (64%). Accordingly, while men ranked honey second, it was fourth for women. It can be argued that, in comparison to men, women's participation in accessing income from honey is low confirming their marginalisation, especially at stages of the chain where value is high.

Several studies have shown that the improved enterprise increases household income, which is also spelt out in the bee keeping policy, GOK (2009). However, most of these findings are gender neutral, and this has mislead many development projects who do not take it as central. It is a fact that in any community, women's and men's roles, including needs, are diverse and this should be considered at planning stages, failure to which can bring negative impact after transfer. According to GOK (2009), in some communities, women were not allowed to participate in bee keeping a problem that is slowly fading away through education and introduction of improved technologies. This is an indication that gender roles can change. Appropriate policies can therefore help foster gender equality, even as agriculture itself is changing by becoming more commercially oriented, as is the case in bee keeping.

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4.5 Access to and Control of Land as a Collateral for Credit

Land tenure and utilization is crucial in rural development. It is used by many men and women as a collateral to get credit, an important avenue in bee keeping which is shifting to commercial. The study sought to find out the levels of participation in access to and control of land in the study area. This was achieved by analysing land sizes by household as well as access to title deeds.

4.5.1 Access to Land by Household

The size of a farm allows diversification of various commodities. This is especially so for bee keeping because the apiaries need to be distant from other human activities due to the nature of bees. The study sought to assess land sizes accessed by bee keeping households (Table 10).

Table 10: Access to Land by Household Head

Land in acres			MHHs	FHHs
	Frequency	%	%	%
0.5 to 1	11	6.2	2	0
1.1 to 2.4	43	24.2	17	22
2.5 to 5	17	9.6	9	11
5 and above	106	60	72	67
Total	177	100	100	100

Findings reveal that out of 177 men and women who responded, majority 106 (60%), had access to land varying from 5 acres and above; 72% in MHHs and 67% in FHHs indicating that land sizes in Trans Mara are big and both type of households have access. However, this may not necessarily mean that they all have control of the vast farms, reason why the study sought to find out the control status. This was achieved by looking at the title deeds.

4.5.2 Control of Land Title Deeds

Findings revealed that 91% of title deeds were possessed by men and 9% by women, a scenario suggesting that despite single women accessing big pieces of farms, it occurs land titles and tenure tend to be vested in men. For example, the study noted that majority of widows have big farms but they have no control since title deeds are in their husband's names. They were loaning part of their farms to enable educate children and expressed willingness to enhance bee keeping with assistance of low interest loans. They however, cited challenges in security yet majority have big farms whose tenure is in their late husband's names.

While gender issues are mentioned in most national and regional strategic plans, including land, they are relegated to separate chapters on women, rather than treated as an integral part of policy and programming. Similarly, Kenya is a signatory to Sustainable Development Goals (SDGs), for instance, number five; achieving gender equality and empowering women and girls, and number ten; reduced inequalities, which was also spelt out in 2000 Millennium Development Goal (MDGs) number 3. The government's commitment to mainstreaming gender is also spelt out in the bill of rights in 2010 constitution, and envisioned in 2030's vision under social pillar. It is in this context that gender issues need to be seriously addressed if vulnerable farmers, majority who are women, will realise their potential and benefit in commercial agriculture. Consequently, failure to minimize gender inequalities in agribusiness has continued to have

negative effects in realisation of poverty eradication not only in the study area, but in many parts of the Country.

Tripathi *et al*. (2012) argue that in several African countries, national laws dealing with women's rights to own land coexist with often contradictory and a parallel set of customary laws. This impacts negatively on majority of divorced women such that when they return to their villages (birthplaces), they may only use land through their male members of the family, or be allocated a piece of land by the chief or clan members. In many cases, however, widows are chased away from their villages, a familiar scenario to most Kenyan homes. Consequently, apart from affecting the socio-economic development, it is also causing emotional stress to many victims, and eventually, death. This calls for urgent need to amend both national and regional laws on land tenure, including agricultural strategic plans and policies to recognise gender as key in order to enhance both agricultural production, and hence, poverty alleviation.

The process should be all inclusive, especially in county governments with participation of rural men and women in decision making forums. This has worked elsewhere, notably, Malawai (Tripathi *et al*., (2012). The scholars indicate that as part of Women's Land Rights (WOLAR) Project, women, men and traditional leaders in villages were sensitized on rights and national land policies. By 2010, a total of over 2,000 landless women were allocated land through this project. As a result, most chiefs have changed their mind-sets and attitudes towards land ownership as captured in the following sentiments from women in Malawi, 2010:

For decades, land ownership, including its proceeds were men's issues. We could grow farm produce but everything was controlled by men. Through the WOLAR project, we realized that the state of being landless was a serious human rights issue that needed urgent solutions. We now have control of land, the produce and income. A man manages his own piece of land and a woman does likewise. We now have control over the sale of farm produce and the income. As a result, there are less household conflicts concerning proceeds. We appreciate this change because we feel liberated now since we are able to decide what to do with what we have and when we want.

The scenario above shows it is possible to empower men and women in rural areas on human rights. Research has shown that if women have equal access to land and other productive assets as men, they can increase farm yields by 20-30 per cent (FAO, 2011a). Both genders acquire and use assets in different ways and in diverse contexts thus, a full understanding of these differences is therefore essential in formulating gender-sensitive interventions for the resource-poor men and women. This need is greater in conservative communities in which, apart from gender-specific challenges, cultural perceptions also impede development. Women need secure and stable access to productive resources in order to invest in, and improve their production systems, improved bee keeping included. If such initiatives have borne results in Malawi, they can also work in Kenya especially with the will power of key stakeholders. This will not only increase women's realisation of their potential in commercial agriculture, but also the governments' in poverty alleviation by 2030. With practical gender sensitive strategies, it is doable.

5.0 SUMMARY CONCLUSIONS AND RECOMMENDATIONS

5.1 Summary

The study noted that majority of men, in comparison to women had access to improved hives which yield more than the traditional ones. This negates the intention of transferring the improved enterprise among the *Maasai* community which was to increase income and raise the standard of living. Findings show that for both genders, access to improved harvesting equipment, refining machines and quality packaging materials is low. However, all smokers were possessed by men and no woman respondent had any. Consequently, their participation decreases further in nodes of the chain where value is high, attributed to gender related factors such as access to capital, mobility and time including gender perceptions that constrain them. Results indicate the main marketing channels used in the study area are middle men, local consumers, retail shops, open air and cooperatives.

The study noted that most men and single women had access to marketing channels which offer better prices. They both control time and income thus, can source outside markets. Married women are not only constrained by mobility and time, but also gender perceptions thus, they can only depend on outlets near home. This impacts negatively on them, yet they are active participants in the improved enterprise. The study found that very few women earn income from honey in comparison to the high number of men. As a result, it jeopardises their potential yet they are new in the business. Further, it affirms what was noted earlier that improved bee keeping is becoming an important enterprise that elevates men, as it impacts negatively on women especially at stages of high value. Consequently, it is a challenge for them to enhance bee keeping.

5.2 Conclusions

The findings revealed that demographic data influenced participation in improved bee keeping especially in access to hives and marketing of bee products, stages of the chain with high value. As a result, women and youth are marginalised. The fact that women as old as 18 years are illiterate, also widens the gender gap. They are required to have basic knowledge on how to transact the business. Results also indicate that challenges in access to capital, gender related factors such as mobility, time, and cultural perceptions, have impacted negatively on participation levels especially in accessing improved equipment, trainings, and also control of income from bee products. Consequently, these factors have affected women more than men, yet the former are new in bee keeping thus, their need for capital, including moral support, is greater than men's. Further, the fact that men control high value assets such as livestock and land, continues to widen the gender gap in improved bee keeping value chain whose intention is to increase income and raise the community's living standards.

5.3 Recommendations

The study found that women's participation in access to improved equipment and trainings was low in comparison to that of men due to capital constrains, gender related factors such as mobility, and gender perceptions. Further, majority of men and women were illiterate including young women as old as 18 years. The study suggest the following recommendations:

To increase both genders' access to improved equipment, bee keeping interventions should partner with Kenya Agricultural and Livestock Research Organisation, Ministry of Agriculture and county governments to raise awareness and initiate household empowerment among the participating men and women. Gender responsive forums within their localities can be used. For instance, sharing productive resources in households and neighbourhood 5.3can be instigated by encouraging men and women who own improved equipment to share with those without. This can motivate the vulnerable, majority who are women, to transit gradually from traditional into modern equipment. At the same time, such forums can be used to understand the underlying cultures and other traditions that hinder participation especially in access to trainings hence, initiate solutions.

As a marketing strategy, the county government and bee keeping interventions should initiate gender responsive associations in order to enhance men's and women's collective action in the following; purchasing improved equipment such as quality processing machines, source for better markets to minimize middle men and advertise products. In such associations, stakeholders such as private developers and NGOs can raise awareness on value addition and uses of bees wax. At the same time, they can also be used for empowerment purposes for instance, introduction of adult classes that can enhance knowledge for the illiterate men and women.

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