

Correlations between the increase of horticulture production and gender relations in Kibugu location, Kenya



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As a team, we decided to state that all of us participated to every part of the report writing considering the intellectual involvement, discussions, drafts and previous versions created by every members.

DECLARATION

By signing this document, we certify that all members have reviewed and agreed that this is the final version of the study report. Moreover, we declare that the research is our own and all sources of information have been duly acknowledged.

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ABSTRACT

Gender relations in rural households of Kenya have been shaped by both indigenous customs and colonial influences. This traditional organisation is now changing, led by the global market demand and prices that have triggered the drive of both institutions and farmers to turn the production more and more toward horticulture.

Through the triangulation of data obtained from literature, 34 interviews and observations, our study based in Kibugu, Embu county has highlighted three livelihood strategies with diverse outcomes, despite the continuous aspect of the transition from subsistence to commercial production in horticulture. Overall, those strategies are the consequence of the uneven repartition of access to irrigation, essential to the production of horticulture.

From the point of view of the task division it is clear that the first part of the transition process threatens mainly wives, increasing the workload traditionally attributed to them.

Nevertheless, the commercialisation becomes less gendered and in some cases gives the opportunity for women to own some money.

From the decisional point of view, the knowledge in horticulture traditionally owned by women enhances their bargaining and decision position. Individuals' personality and social position also remain an important factor. The financial decisions remain gender based, benefiting the husband, but the room of manoeuvre is increased for women thanks to cash money. Indeed, if the wife's money is still mainly spend for the household, it also generates the possibility for women to access women self help groups. Women groups provide a financial and intellectual room of manoeuvre, increasing the support and their confidence, that would trigger more bargaining power in gender relations.

Key words: Gender relations, Kibugu, Horticulture, commercialisation, Bargaining Power

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INTRODUCTION

During the pre colonial period, Tignor (1976) explains how Kenyan society was organised around self-consumption households farming ensuring their own food sovereignty. The author says that at this time exchange of commodities was common among farmers and neighbours, but not yet influenced by European capitalism. At the end of the 19th century colonialists invaded Kenya and their agricultural production started to change (Kiriti *et al.*, 2002). During the colonial years and until the independence in 1963, colonial policies have dictated the production trends and new customs, imposing to the Kenyan rural society a new vision of gender relations. The local population was forced into labour in cash crops as coffee, leading them to give up on many traditional activities. In 1953, ten years before the independence, the Swynnerton plan led to redistribution of land property titles to African men, as an incentive to keep producing cash crops and ensure the production for following years (Ibid.). Kenya was left with the indelible impact of colonisation, which turned the social-economical context upside down (Sørensen, 1996).

In addition to the economical link between Kenya and Europe, colonization has shaped gender relations through the filter of exploitation and productivity without regards for deregulation generated in the social organisation (Sørensen, 1996). As a consequence, women have been thrown away from responsibilities, access to resources, decision making and considered as marginalized workforce. Men would rule the coffee production embedded in the capitalist organisation left by the colonialist system. During many years, this strong tradition of labour and power division in the household has been reproduced, ensuring men's power over resources. From the patriarchal perspective, the introduction of Christianity legitimated even more the role of women in reproductive work as child care, cooking, housekeeping and the duty of obedience to their husbands (Ibid.). Boserup was one of the first to speak about these trends in 1970, noticing a transformation in gender relations generated by colonialism and the encroachment of capitalism on subsistence agriculture. Many studies during the following years concluded on the negative effect of commercialization and capitalist transformation on gender relations in peasant societies (Sørensen, 1996). Nonetheless, the gender relation structure implemented by colonialism had the capacity to structure a society in reconstruction, according to the duty of subsistence production and reproductive work to women for the household but also rights associated to it (Ibid.).

In the 90s, the coffee crisis and the emergence of new market opportunities triggered a will amongst farmers and governments to increase horticultural production for commercial purpose. While Tignor (1976) underlines the importance to remember the origin of horticulture for food security and self sufficiency before colonisation, Sørensen (1996) additionally warns us on the drawbacks brought with a capitalist approach of such a resource for peasants. She insists on the consequences of business horticulture on the household relations and the destruction of customary gender roles for more flexible ones. This new mutation in gender relations is perceived by Sørensen as a potential risk for women to become even more vulnerable by losing their position of food providers. Mbataru (2007) on the contrary, argues in favour of a positive impact of business horticulture on women's power inside the household, offering them room of manoeuvre.

Discrepancies encountered in the literature raised our interest on the specific question of the impact of horticulture on gender relations. Our study area presents the trends encountered in agricultural development of Kenya and hence encompasses the social phenomenon related to the production mutation.

Research questions

In which ways are gender relations in the household affected by the commercialization of horticultural crops in Kibugu?

- How are access to and control of productive resources affected for women and men as individuals in the context of horticultural commercialization?
- How are access to and control of benefits affected for women and men in relation to the commercialization?
- How does access to and control over productive resources and benefits affect the bargaining power relation between household members and thus the gender based division of labour?

Description of study area

The research was conducted in Kibugu location. Kibugu is situated on the slopes of Mount Kenya in the upper part of Embu County. Kibugu consists of several sub-locations, of which our research was focused in Kithiria and Kathakwa. 70,1 percent of the population of Embu relies on agriculture as the livelihood and in the upper part, which Kibugu is located in, cash crops such as coffee and tea make up the majority of crops grown (OCB 2017). According to the results from our questionnaire, average land size is 2,36 acres and half of all the households in the survey have less than 2,75 acres.

Conceptual framework

To structure our data we used the Sustainable Livelihood Framework (SLF). We took inspiration in the way the SLF shows how livelihood strategies are formed by a combination of assets, placed in a context with transforming structures and processes. Drawing on the division of the assets into different capitals we were able to identify which assets that would be relevant for our analysis of the different livelihood strategies we encountered in the field. The assets were as follows:

Human capital: knowledge and access to workforce

Natural capital: land and water

Financial capital: regular inflow of money and off-farm work

Social capital: network and groups

Physical capital: water sanitation/irrigation and access to information

METHODS

Introduction to our fieldwork

The fieldwork was conducted in close collaboration with three students from Nairobi University. All empirical data was collected during a ten day long field study that took place in Kenya, Embu county, Kibugu. Different methods were applied for collecting the data. These were; participatory observation/informal interviews, questionnaire and semi-structured interviews.

Short method descriptions

Informal interview & participatory observation

In Kibugu we were hosted by three different local families which meant that observation with different degrees of participation and informal interviewing was used throughout the fieldwork. We obtained a lot of information and understanding of Kibugu during interactions with our host families, guides and local people in general. Foremost these methods were used to triangulate, and thereby validate our data (Bernard, 2011). We used observations and informal interviews to triangulate the data obtained from the semi-structured interviews and the questionnaire. As an example, after asking farmers about which crops they had, we could see them for ourselves and in some cases we observed more crops than they farmers had mentioned or we noticed other things and could ask questions about what we saw.

Questionnaire

We conducted a joined questionnaire in our field site with the four student groups from Copenhagen University. This questionnaire had questions on basic information on household characteristics. But it also contained questions related to each of the four groups topics.

The reason we wanted to do a questionnaire in our research team was to get general data about the area and basic information in order to help us locate relevant respondents for our semi-structured interviews. Following our topic on commercialization of horticulture, our contribution to the questionnaire was a table that, when answered, would illustrate which crops the households grow for selling and which they grow for consumption. Before starting the collection of questionnaires we tested the questions with a local guide/translator from each group. Bernard (2011)

explains that testing a questionnaire is good to make sure that the questions are not inappropriate or confusing. Also we wanted to try to make sure that the questions made sense when they were interpreted from English into the local language, Kiembu, we also tried to make sure that our guides/translators were following the meaning of our questions.

In our group we split up into two groups of four people with a guide/translator each and then headed out in different directions in our area, Kithiria. For the type of sampling, we had planned to go with a systematic random sampling, which Bernard (2011) explains is when you start from a random household and then choose every second or third household along the way. When we arrived in the field this turned out to be challenging since the distance between the houses would differ a lot, the density of the households would vary from area to area and we also experienced issues with people not being home. The solution in our group specifically was to do more of a random sampling where we relied on our guide's/translator's choice of direction and their ability to reach out to the people in the households we passed.

Moreover we strived to keep the questionnaire as short as possible due to the fact that too many questions can make the respondent lose interest (Bernard, 2011). This was proven to be a hard task and in most cases the questionnaires our group conducted took around 15 minutes to answer. Since each questionnaire represents one household there could in some cases be several household member present during the conductance of a questionnaire, but it would still be noted as one person answering for the entire household. In total the four groups managed to collect a sample of 95 questionnaires, distributed in the four different areas of Kibugu where the student groups were hosted.

Semi-structured interviews

Our main method for collecting data was interviews and more specifically semi-structured interviews. All of our interviews were recorded, Alvehus (2013) explains that recordings can limit respondents answers but also be useful if notes are proven to

not be enough. We used interviews as a tool for obtaining information from several key informants consisting of two agricultural officers from Embu County Government, the secretary manager of Kibugu Farmers Cooperative Society called Jane Njoki, and participants in a chama. The interview with the agricultural officers took 80 minutes, the one with the secretary manager Jane Njoki 60 minutes and the one with the chama group 30 minutes. In the case of the agricultural officers, our teachers set up a meeting with them and for the secretary manager Jane Njoki we basically went to her office asking if she would be okay with participating in an interview. We were able to participate in a chama meeting and ask questions to the participants since one of our hosts were a part of that chama and agreed to take us there.

Moreover we used the interview method to collect information on farmers in Kibugu. Interviews with farmers often lasted for 25-45 minutes. Before we got to Kenya we thought that our sampling of farmers would be based on their type of production but it appeared that all of them were producing horticulture and hence, a random sampling was more accurate. We started off by doing interviews in the area we lived in called Kithiria. After making interviews for two days it became clear that the farmers in our area in a higher degree than others used irrigation. Since we thought that having irrigation would increase farmers possibilities of growing horticulture we decided to interview farmers from an adjacent area called Kathakwa where irrigation was less common. We did a total of 34 interviews with farmers, 25 from Kithiria and 9 from Kathakwa. In the field our guides in a few cases directed us towards specific farmers that they thought could be of extra interest to us but most of the time we used "door knocking" as a method for recruiting respondents for our interviews. Moreover we often had to use translators to be able to communicate with farmers since they often did not speak English very well, but spoke the local language Kiembu and sometimes Kiswahili. We had two hired guides/translators that spoke the local language Kiembu and two kenyan students in our group that spoke Kiswahili. These four people all acted as translators during our field study.

Before going out to the field we prepared an interview guide (see appendix). The interview guide was discussed with our two guides/translators. The interview guide was foremost thought of as guidance for us during the interviews. Before going out to the field we divided our group of eight people into two separate research teams that had one guide/translator each, we did this to be able to do more interviews. We decided that we wanted to try and make sure that male farmers were questioned by a male interviewer and vice versa since we had heard that people could be more hesitant to answer questions if they were asked by the opposite gender. Before each interview we decided on how to conduct that specific interview. One person would always be responsible for asking questions, and at least one other person for taking notes during that interview.

RESULTS

Livelihood strategies

We categorize the households into three categories. These categories are based on households' livelihood strategies about horticulture crops commercialization:

1. Commercialization of horticulture crops during the rainy season. These households grow horticulture crops mainly for self-consumption into a kitchen garden but can sell their surplus.
2. Commercialization of horticulture crops' surplus all year long. These households grow horticulture crops mainly for self-consumption but can sell their surplus.
3. Commercialization of horticulture crops all year long. These households grow horticulture crops as a source of income. They still consume what they produce but their main focus is the commercialization.

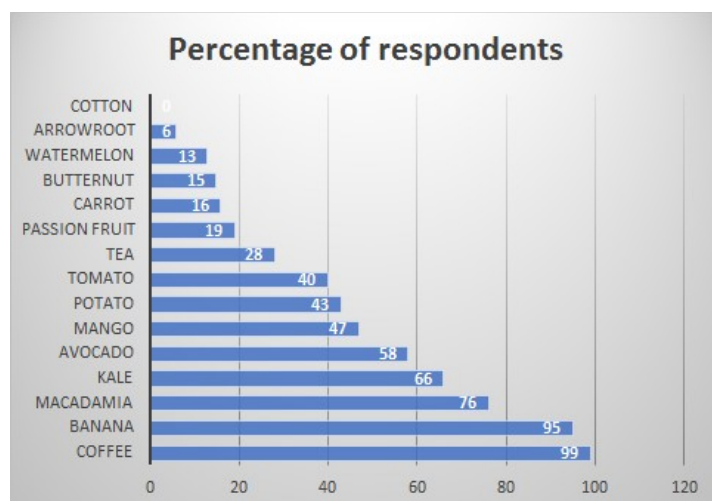
In order to understand how these livelihood strategies occurred, we look into the vulnerability context, livelihood assets, transforming structures and processes and livelihood outcomes thanks to our inspiration from the sustainable livelihood framework.

Context

Crops grown in Kibugu

In Table 1 crops grown in Kibugu are presented. Most important crops seems to be coffee, banana and macadamia followed by some horticultural crops. The data from the questionnaire showed that most of the households did not introduce new crops over the time period of five years.

Table 1



Households grow crops for self-consumption and/or selling. Hence, we establish this typology of crops:

1. Crops which are mainly grown for self-consumption: we define as subsistence crops (SC).
2. Crops which are grown for self-consumption and selling: we define as food crops (FC).
3. Crops which are mainly grown for selling: we define as cash crops (CC).

From our analysis of the questionnaire we obtain the following categorisation of crops:

1. Subsistence crops: Mango, potato, sugarcane.
2. Food crops: Banana, avocado, kale, tomato, arrowroot, passion fruit, carrot, butternut, watermelon.
3. Cash crops: Coffee, tea, macadamia.

According to our interviews and observations, we classify the other crops as following:

1. Subsistence crops: Apple, sweet potato.
2. Food crops: Cabbage, capsicum, maize, papaya, tree tomato, bean, french bean, coriander.

Crop typology based on environmental, economical and nutritional characteristics

Sensitivity to drought, impact on topsoil, growing season, price, inter-cropping are characteristics we look into here to categorize the crops grown in Kibugu. We distinguish high value crop (HV: >100 Ksh/ kg) and low value crop (LV: <100 Ksh/kg); long growing season crops (L) and short growing season crops (S); drought resistant crops (DR) and water demanding crops (WD); crops which can be responsible of topsoil depletion (D) and those which does not (ND); crops which are intercropped (I) or not (NI).

Table 2

	Economical characteristics		Agronomic characteristics		Environmental characteristics	
Crop	Commercialization typology	Price (Embu)	Growing period	Sensibility to drought	Impact on	Intercropping
			(days)		topsoil	
Coffee	CC	HV (100 Ksh/kg)	L	DR	ND	I/NI
Tea	CC	LV (12 Ksh/kg)	L	DR	ND	NI
Macadamia	CC	HV (100 Ksh/kg)	L	DR	ND	I
Banana	FC	HV (100 Ksh/kg)	L (300-365)	DR	ND	I
Avocado	FC	LV (25Ksh/kg)	L	WD	ND	I
Kale	FC	LV (38 Ksh/kg)	S	DR	D	I
Tomato	FC	LV (47 Ksh/kg)	S (135-180)	WD	D	I/NI
Arrowroot	FC	HV (100 Ksh/kg)	S (100-140)	WD	ND	NI
Watermelon	FC	LV (15-35 Ksh/fkg)	S	WD	D	I/NI
PassionFruit	FC	HV (108 Ksh/kg)	L	WD	ND	I
Carrot	FC	LV (36 Ksh/kg)	S (100-150)	WD	D	I
Cabbage	FC	LV (30 Ksh/kg)	S	DR	D	I/NI
Butternut	FC	LV (20 Ksh/kg)	S	-	D	I
Capsicum	FC	HV (100 Ksh/kg)	S	-	ND	I
Coriander	FC	-	S	-	ND	I
Tree tomato	FC	-	-	WD	ND	I/NI
Bean	FC	LV (62 Ksh/Kg)	S	DR	ND	I
French bean	FC	LV (20-50 Ksh/Kg)	S	WD	D	I/NI
Maize	FC	LV (37 Ksh/kg)	L	DR	D	I
Mango	SC	-	-	WD	ND	I
Potato	SC	-	-	DR	ND	I
Sugarcane	SC	-	-	DR	ND	I
Sweet potato	SC	-	-	DR	ND	I
Spinach	SC	-	S	WD	D	I

Price fluctuations and climate change

Out of all our 34 respondents some noticed climate change by observing a change in the rainfall pattern (14) and the quantity of water inside the river (2) as well as a change in diseases and pests (5) and a temperature increase (2). One respondent mentioned that a modification of the rainfall pattern was obvious in 2016 since they do not have rain in October, a month which is usually a part of the rainy season. As a result, some households state that they could not harvest their production in 2016. The two government officials also thought that climate change was impacting the area since they had experienced disparities in rainfall patterns as well as an increase in crop diseases. Hence it seems that the agricultural production is affected by climate change in quality and in quantity.

The fluctuation of the coffee price is a challenge in growing this cash crop. The coffee price fluctuation was mentioned as a challenge and a constraint by thirteen of our respondents as well during the chama meeting. Some respondents said explicitly that the returns from coffee sale are not “profitable” (5) The unpredictability of the coffee price could make coffee production less attractive and more difficult as noticed by the two government officials and the representative of the coffee cooperative, Jane Njoki as well as by three respondents. Important to notice is that uprooting coffee is not accepted considering the social norms (see below).

Structures

Public sector

- Extension worker

The extension officers work with counselling and education of the farmers on what crops to grow and how to grow them. From our interviews we experienced that not all farmers are positive on the help the officers are providing. One farmer explained that the extension workers from Embu government are not helping them when they actually need help. Instead they are arranging farmer's fairs which is mostly for show.

Some farmers explain that they used to get counselling visits from the extension workers but they don't any more. Nonetheless some farmers mentioned the extension officers as someone you can visit if you need advice.

The extension officers we interviewed expressed that from their point of view they do not have the resources to help the farmers as they did some years ago. Earlier they could visit people's homes because they were more people and had transportation for that, but not any more because of cutbacks. Furthermore the extension workers expressed their frustrations due to the fact that when they arranged meetings and fairs about agriculture and farming the farmers didn't show up.

All together this lead to the impression that there is a lack of collaboration between farmers and extension officers in our field of study.

- Irrigation office

The irrigation office controls that the local population respects the rules toward water consumption and access. For example, they make sure that people do not use tap water to irrigate lands. The irrigation office is also responsible of gathering money from water consumption. One farmer told us that he pays 250 Ksh of tap water per month, which he gets from pipes. Irrigation fees are often mentioned as too expensive and not accessible for all (4). Finally, this office is in charge of supporting a self-help group that wants to implement irrigation schemes such as fed-pumps. Two households are currently benefiting from this material and financial help. However, this help seems unequal between households and villages in Kibugu.

For example, two farmers from Kathakwa have mentioned the difficulty encountered to get support from the government for implemented irrigation schemes in self-group or individually. These differences in access to water can create jealousy and disagreements between households as well as tensions against the government. For instance, one respondent accuses the government of corruption and argues that it does not help farmers equally to access to horticulture crop or to increase their resilience to climate change.

Private sector

- Companies in horticulture

International or national horticulture companies propose contracts farming to farmers. Because the contract are passed with stakeholders as individual workers, women can benefit from them. The contract farming concern the mono-cropping production of a specific horticulture crop such as watermelon or French beans. They can provide some inputs for free to farmers and in return, the farmer has to meet a specific yield as well as specific standards of production to be paid. As a matter of fact the company Frigoken, the largest vegetable processor in Kenya, has been hiring farmers in Kibugu's area, but without success. Indeed, two of our female interviewees told us that they have stopped these contracts since they were not able to meet the requirements. In addition, they have claimed that through this contract they had to use a part of their land for an agricultural production they, hence, can not use for self-consumption. We have to notice here that these contracts farming were bargained in a self-help group whereby each worker was contracted as an individual and not a household or a group.

Companies also participate to workshops organised by the government to teach farmers about use of pesticides. Furthermore, they can provide personal advisers who come to the farm. It is, for example, the case of the wealthiest household of our sample who gets advice once a week from the company GreenLife and this, for free. In this case, our interviewee has assumed that private advisers are better and more available than official workers. This assumption has been made by two other households.

Civil society

- Chamas

Chama is a self help group for different purposes with a focus on credit facilities, community building and social networking. A chama is led by a chairman and often contains a secretary and a treasurer. To be part of a chama, you need to fill some criterias defined by the chama itself. First of all, a membership always requires to pay an annual membership fee which is chama specific (2000 Ksh/year for example). In

addition, a chama membership can be gender specific and/or can require from the member to do specific agricultural practices such as growing horticulture crops and/or to have a specific religion. It seems that most of the chamas in Kibugu are for women. The two government officers have assumed that 80% of members in chamas are women. In their words men don't trust each other enough to be part of chama. Still gender mixed chamas also exist since we attended a meeting of one of those, in which there are 21 members, 12 men and 9 women.

Because of these membership criterias, especially the financial one, chamas are not accessible to all. 15 out of 34 respondents are part of a chama, distributed on 12 women and 3 men. 5 women told us that they could not be part of a chama since they can not afford the membership fees.

Nonetheless, chamas present many financial and social benefits. Firstly, it is possible to get low rate interest microloans in cash. This benefit is mentioned by eight of our respondents. One woman has precised that she borrowed 200 000 Ksh to pay her kid's school fees, and the reimbursement was expected done in two years. Schools fees, investment in agricultural production such as horticulture, house expenditures are examples of investments made thanks to the chama. In addition, a chama can be a place where members save money during the year and share it at the end of the year. Finally, members benefits of social networking, community buildings, social interactions and knowledge from chamas (5 respondents; Government officials; chama meeting). According to the government officials, chamas help women to relieve them from their productive and reproductive work and are a space where women enjoy their time.

- Coffee cooperative

All coffee farmers in Kibugu are part of the cooperative Society, which takes care of the processing and marketing of the coffee beans. Since 1964, the number of coffee factories in Kibugu has increased from one to five. This illustrates how coffee is an important crop in Kibugu: farmers do not "give up on coffee" even if its price is fluctuating through the years. The cooperative is a major driver of this tendency since it offers a lot of incentives to grow coffee such credit facilities, bank account access, meetings and inputs such as chemicals.

The coffee cooperative plays a key role on the way coffee is produced. Indeed, on the

past, it did not allow farmers to intercrop their coffee. Nowadays, this restriction does not exist anymore: this is an opportunity for farmers to increase their horticulture production since they can intercrop coffee with cover crops such as kale or watermelon.

Moreover, the coffee cooperative has a strong control of the way farmers are selling their production. Indeed, they do not allow middlemen to buy coffee and thus has a total control on the way farmers commercialize their coffee production.

Processes

Legislation

- Women's access to coffee cooperative

Since men are mostly the ones to inherit land as will be elaborated later on, they will also often get the membership in a coffee cooperative, due to their access they are given by tradition. From our interviews with those households where both husband and wife were a part of the coffee cooperative we got information on the procedures for women to obtain a membership. Overall we only know of four women in our interviews that have a membership. In one case the husband explained how the wife had to write a letter to the coffee cooperative and he had to vouch for her. To be able to get the membership she had to prove that she owned 100 coffee stems. This was confirmed as a criteria when we interviewed one of our key informants Jane Njoki. She also told us that even though things are changing, men stood for 70 percent of all memberships of the coffee cooperative. Because the men are the ones inheriting land or the head of the household, men are the ones owning the coffee and controlling the bank account and woman seldom have the possibility of becoming a member herself. Thus the coffee tradition is very much linked to the patriarchal family/social structure and the land inheritance tradition.

Institutions

- Land inheritance and bride price

Land inheritance is often patrilineal, meaning they inherit from the father's side. .

According to Cathrine Muthoni the farming choices are highly affected by the inheritance of coffee land, creating this kind of a “passive” continuation of the coffee production down through the generations.

Out of all the farmers interviewed only two women that were not married owned land. One of these were single and the other one was widowed. Due to this cultural institution it seems that the way for women to gain access to a piece of land is generally through male relations, e.g. their husbands.

Regarding marriage it became clear that there are certain traditions following the relation that is created between two families in a marriage. Through informal interviews we were told about the customs of bride price which implies that if a man and woman wants to marry the man will have to pay the family of the woman. The price depends on several aspects regarding e.g. the level of education of the woman and the bride price paid for her mother. According to the informal interview this custom can in some cases imply that the man get the feeling that he owns the woman and therefore has a bigger say in decisions made between them. One of our female interviewees told us that women mostly disagree with their husband but that they could not complain and contest these decisions because of their cultural norms. One of our female interviewees also remarked that she would like to live alone in order to be more empowered. In another informal interview there was a more positive emphasis on the way the bride price creates a stronger relation between the two families in law.

- Labour division

Regarding the labour division between husbands and wives, several farmers mentioned that women in general work harder and more than men do. One female farmer says that some men neglect their wives and leave them with all the work. Another male farmer also explains that it is not common for men to help their wives with the work on the farm. One female farmer express that it would be nice if men and women could discuss and agree on the labour division, but this is hard since the culture does not allow men to do what is perceived as women's work. Regarding the reproductive work it is clear that these are the women's tasks in Kibugu. One man explain this and says that it is his wife's duty to take care of the children and his to provide for the family through the production of coffee and selling of milk.

The division of labour between the crops is not clear and fixed even though farmers sometimes refer to some crops as men's and others as women's. Most farmers mention how the man in the household is responsible for duties related to coffee production,

foremost spraying. The women on the other hand seems in a higher degree to work on all crops and be responsible for tasks such as preparing the land, weeding and harvesting. One example is one female farmer that explain how her father sometimes work on the horticulture crops but that his focus is on coffee, and her mother's is on horticulture. This way of explaining the labour division is seen in numerous interviews. A male farmer state that the reason for why men in general are more involved in coffee than other crops is due to that "*Men love big money*". Following this trend a female farmer explains that her husband is responsible for cash crops, thus does he work alone on both coffee and watermelon since it is their most income generating crop. Several farmers also hire workers to help them with the cash crops. Tasks that workers do often consist of spraying coffee/ tea and picking macadamia.

Analyse of each livelihood strategy

For more informations about the analyse of the sample, refer to the appendix.

Type 1: Seasonal sellers

The type 1 is composed of 8 households mainly living in Kathakwa and none of them has access to water. The livelihood strategy rely on the coffee production as a main source of income with few drought tolerant horticulture crops mainly during the rainy season where they can possibly sell the surplus. The knowledge is provided to farmers through the coffee cooperative which they are member of, implicating that all of the men as a bank account. Money from coffee is principally used to pay school fees and inputs. Almost all of them hire workers to work on the coffee, while the wife is working in the subsistence crops and doing the reproductive work. 75% of the women are part of a chama. It seems that women in this type has not much bargaining power and the household rely on the Kenyan traditional organisation.

Type 2: Surplus sellers

The type 2 is composed of 8 households mainly living in Kithiria close to a stream but not owning irrigation infrastructures, hence they harvest water by hand. Coffee remains the main source of income and allows to pay the school fees. They also grow drought resistant crops all year long and sell it when they have surplus. They do not rely on the coffee cooperative as a main source of knowledge, but rather on their network and observation. The husband is still the owner of the bank account but some

wives have access to the cash money from horticulture. The household still follows a traditional organisation, hence women work on the horticulture. Membership of chama is not common in that group.

Type 3: Business sellers

The type 3 is composed of 13 households all located in Kithiria except one. They own good infrastructures to fetch the water and hence can irrigate their crops. As a consequence, they rely more on horticulture production than coffee production and grow a more diverse panel of crops including water demanding once. They also grow macadamia. The wealthiest of them hire workers on horticulture. Many male respondents have an off farm job and women are responsible for managing horticulture in some case, they can even have bank accounts. The panel of households seem to be relatively wealthy, some of them even bought extra lands for agriculture.

Comparison of livelihood strategies: From context to outcomes

Comparing the ages of household members in the three livelihoods strategies, we found that seasonal seller strategy (1) was made up of the elder generation. This specificity of the seasonal seller strategy can be interpreted as a reliance of elder generations on the traditional livelihood schemes and processes evoked before, based on coffee production as a main source of income. Furthermore, the households of type 1 seems more impacted by the rural exodus of youths than the other types. This can be explained by the fact that the working conditions seems harder in this type, especially for women, as well by the smaller size of plots. Employing labour can be seen here as a livelihood strategy to overcome the constraints of old age and lack of youths. It is especially true for households which mostly grow coffee or tea for which beans/ leaves picking is very labour intensive.

Access to water and thus to irrigation schemes appears as the main constraint to grow and commercialize horticulture crops, specifically in a context of climate change. We notice that households do not have the same livelihood strategy according to their distance to a natural source of water as well as the type of hillside where they are

located. While surplus sellers (2) are in majority close to the stream where they can harvest the water by hand and business sellers (3) are mainly on the advantageous hillside where they can use piped gravity flow water delivery, households from type (1) mostly do not have access to water for irrigating their crops. Conversely to the business sellers, they do not have the financial capital to afford infrastructures to improve their access to water. This parameter, combined with the structures that do not provide so much support to improve irrigation schemes, is leading to opposite livelihood strategies (1,2,3) and consequently very different outcomes between these types. Access to irrigation allows farmers to grow a wider diversity of horticultural crops, including more water demanding crops, and to obtain better yields. Indeed, it appears clearly that households of type 2 can grow arrow roots though household of type 3 can grow tomatoes, watermelon and passion fruit. Referring to the figure XX, these water demanding ones crops are sold at a better price than drought resistant crops, especially during the dry season. As a consequence, households fitting in the category of business sellers (2) or surplus sellers (1) often get better incomes but foremost present a better financial resilience by getting more regular income since horticulture crops are mostly short growing season crops. In addition, by growing horticulture crops, the households expends less money on the market to buy food and thus, can use their income for other purposes. They also ensure better food security for the household enhancing food sovereignty and providing better nutritional contribution that might impact their health. These benefits are actually well known by all the households, even the ones which are from type 1 which expressed their willingness to grow more horticulture crops. Since irrigation limits these ones, this willingness can result in tensions among households, villages but also between the local population and the structures such as the public body.

Nonetheless, the horticultural production has environmental drawbacks that could on a long term exacerbate the issues triggered by the environmental context, predominantly for more vulnerable farmers as those of the first strategy. Indeed, heavy horticulture production is responsible for soil depletion and the use of chemicals impacts the local environment as well as the wealth of local people, especially workers. Since horticulture crops mainly grow close to water sources, the quality of water in Kibugu could be affected by horticulture production and thus, the wealth of local population.

The market context has triggered the willingness of farmers to increase horticulture production as it is considered for many of them as “worth it”. However, some farmers from group 2 and 3 mentioned the difficulty to access that market, as the structures and processes are sometimes disrupting the incentive. Furthermore, the international market seems much more difficult to access than the local ones since it requires to trigger specific standards and yield. From the context, households from type 1 seem more vulnerable to the coffee price fluctuation, as coffee is their main source of income. Those growing horticulture, are encountering difficulties in bargaining prices or are submitted to the seasonal price variation, depending on the availability of the crop on the local market. This influences the financial capital for the next growing season and thus their availability to grow well horticulture crops in the future.

Horticulture, however, presents the advantage compared to coffee to have several market possibilities, from selling to neighbours, companies and middlemen. We have to underline here that contract farming in horticulture could lead to similar uncertainties than with coffee since farmers have to produce a certain yield to be paid.

We figure out that the type of money gained from horticulture is mainly cash though the one from coffee sale or tea sales is mainly fiduciary money (bank account). This outcome has a tremendous consequence on women empowerment.

Indeed, coupled to the institutional and cultural processes of labour division, financial capital and gender relations, the type of income provided can offer a room of manoeuvre for women to move away from the patriarchal organisation of the household. The marketing of horticulture crops are mainly handled by women, as horticulture used to be a women affair. The money provided is, consequently, mainly cash, which is considered as “small money” for many men and may give the possibility for women to take decision about the way to use it. For instance, this cash money can be used to pay chama fees which, actually, have to be given in cash. Chama is, indeed, perceived as a place where women can express themselves openly, share knowledge and access to micro-credits and loans. Furthermore, growing horticulture crops implies to spend less money for buying food. Since buying food is considered a reproductive work and thus a woman's task, horticulture production can decrease the amount of women's money involved in food sales and thus increase their personal profits.

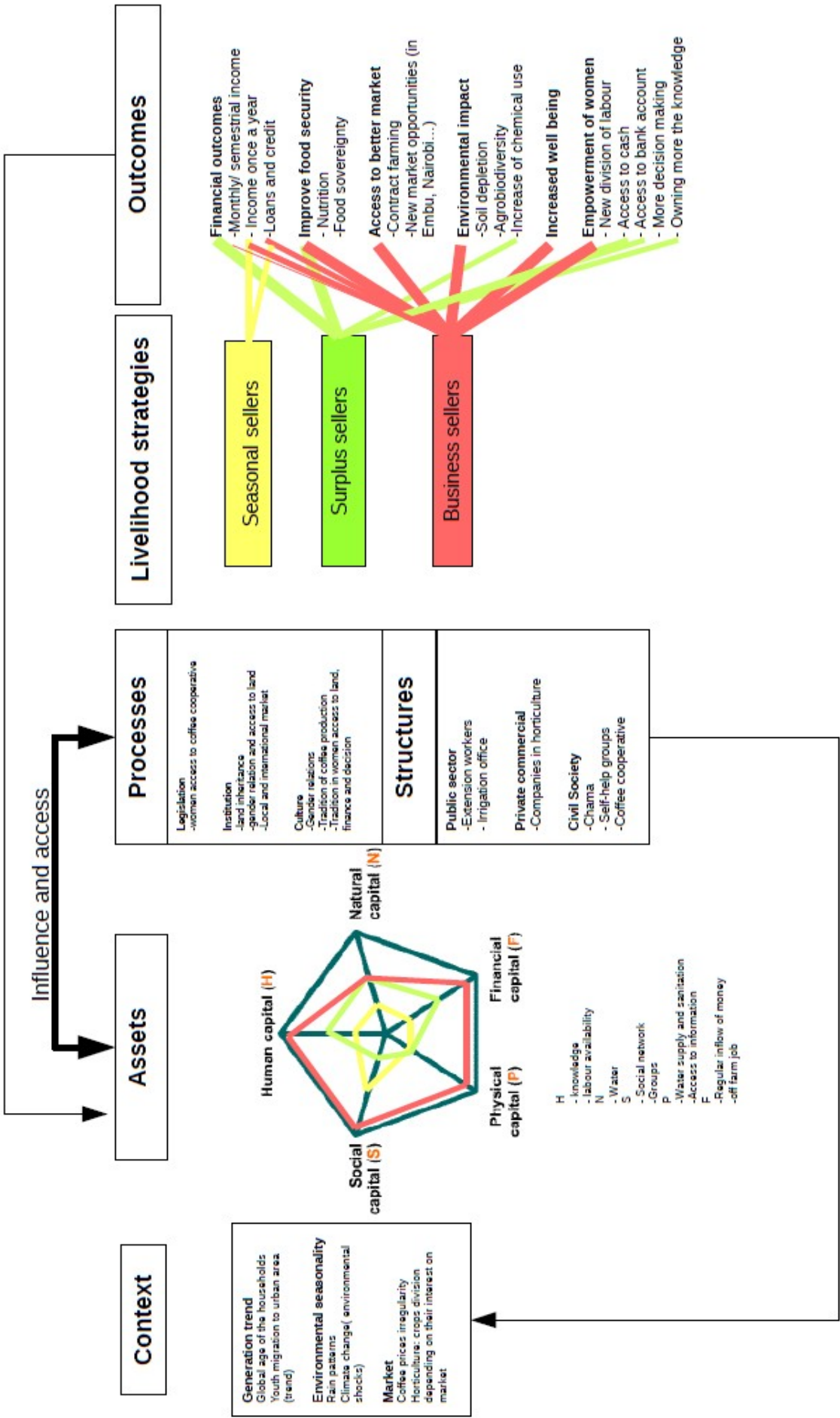
However, in terms of labour, growing horticulture could be perceived as a time

consuming activity for women, especially because it requires to spray more frequently chemicals on it. Actually, horticulture can involve a shift on the labour division into the households. In traditional coffee farming, men are responsible of spraying chemicals though in horticulture production, women are often the ones who spray chemicals. This hard, time consuming and non healthy task can become an important drawback when horticulture production comes to be more commercialized. Commercialization of crops always implies a willingness to make the biggest yield possible. This seems more obvious still in the case of contract farming, or in the case of the surplus group(2) where the household can not really afford employing labour as the household of type 3. Also, households of type 2 present hand harvesting irrigation schemes done mostly by women and children which is necessary to grow horticulture crops but also labour intensive.

We have to underline here that horticulture production could generate good incomes, especially when households are growing water demanding crops such as watermelons or tomatoes during all the year. In this case, it is not rare that men take over the responsibility and thus the benefits of it. Some households illustrates well this case on the type 3. Finally, another room of manoeuvre is triggered by the social capital and the ownership of knowledge in horticulture. As a matter of fact, households included in the surplus sellers category (2) rely much more on knowledge from social network than on the coffee cooperative ones as horticulture has no specific group for sharing. Women are the traditional owners of the know-how as they have been the ones working in the subsistence crops for decades. Owning the knowledge create less reliance on men's competences and offer a strong position for women, that may lead to more empowerment.

The comparison of the three livelihood strategies has been summarized in the following **figure 3** , establishing the relation between the multiple processes and structures, the access to assets and the outcomes.

Figure 3



Livelihood framework for selling strategies in horticulture and empowerment of women
In Kibugu, Embu county, Kenya

DISCUSSION OF RESULTS AND CONCLUSION

Gender relations and room of manoeuvre

Many scholars elaborate that labour division is gendered on the basis of distinction of cash crop/ subsistence crops (Sørensen, 1996; Handschuch et Al, 2013; Forsythe et Al, 2016; Thusaka, 2016). According to our results, it appears that the decision making about production is gender- organised into to groups: Cash crops and subsistence crops. Men are responsible for the first one and women for the second. Considering the labour we found that it was divided specifically on tasks and not in crops. Applicable to all three household types was the fact that women seemed to do more work on the farm than men, which several authors also mentioned as common (Dolan, 2001; Heyer et Al, 2006; Mbaturu, 2007; Dannenberg *et al.*, 2012). Dolan (2001) also confirmed our results regarding the possibility for men to take over the responsibility for horticultural crops as they become lucrative. Nonetheless, we encountered that women are not passive actors but can interfere with that phenomenon.

Another aspect we encountered is how women's influence on gender relations to their own favour, also sometimes find more subtle expressions rather than being manifested in more concrete and formal forms like political influence or economic resources.

Rondeau (1994) explains room of maneuver as the opportunities women seek inside the social rules and are not static or given. From this perspective women are not victims of the circumstances, but are agents and able of changing their situations. Rondeau further explains by stating that by seeing opportunities for action within the social rules and norms, women are able to obtain some authority and change their sometimes subordinate positions (Rondeau, 1994).

Magdalena Villarreal (1992) talks about agency, which she links with the individual's "room for maneuver". According to her, this implies a degree of consent, a degree of

negotiation and a degree of power (Villarreal, 1992). In our material we see how women manoeuvres within the social structure or formal rules and in that sense, undermines structure but in a way that does not break with the structure, but contents to it. When a young woman in Kibugu produces and sells coffee, with the help of her brother, without being a member of the coffee cooperative due to the difficulties of getting a membership, she creates a room of maneuver or herself to challenge the formal structure of the coffee cooperative and the masculinity and tradition of coffee production.

Another aspect we noticed in our results is the way in which women use social networks and informal channels to express their resistance or authority. Among other the chamas, as an informal cooperative society that are considered a women's thing and forms a mean for the women to jointly gain knowledge and credit. This makes echo to the papers of Fisher et Al (2012) and Handschuch et Al (2013). As Barrientos et Al(2003) and Sagagi et Al (2013) shown, we figure out that collective action and network could also be found as a challenge for women since women's networks (chama) have been considered to be more informal while men's networks tend to be more formal (coffee cooperatives). Actually, it is really important to underline that the distinction of informal and formal networks are entirely linked to the type of money they used inside these networks. Indeed, it appeared that cash money, characterized as informal money, is the type of money used into chama though fiduciary money, characterized as formal money, is the type of money used into cooperatives. Consequently, the type of money seems to be gender-based as networks are. Cash money is also the one mainly obtained through horticulture commercialization as precised above and thus can be perceived as a source of empowerment. This distinction can enforce the idea that women gain in empowerment by opening bank accounts, hidden or not, as show by some of our cases.

Villarreal explains how room of maneuver can be "small flashes of command that peeks out from the screens", implying that partial attempts to dominate situations for just a moment is also expressions of agency (Villarreal, 1992). Thus we want to argue that the very freely and honestly way in which women talk about their husbands and show their discontent in many of the interviews we did, can also be seen as a way of countervailing the power of the men. In other cases women bargain authority by

refraining from telling the husband about their own decisions on the crops or the bank account they secretly have.

Another example shows how ideas of passivity, opposed to understanding of power as active, can be an expression of resistance. We were told a hypothetical story about how a man would buy a cow without informing his wife, and she would oppose his decision making by not looking after the cow causing it to die. This shows how the man, who told this story, imagined how women were able to exercise a kind of power by simply not doing anything. Interestingly, when we talked about the story with a widow she said that if this happened the wife and not the cow would die due to how the husband would punish the wife. Thus we want to argue that there exists ideas about how not conforming to the social norms of work division is a mean that woman utilise to bargain power and that among women, this is met with the idea that the men would utilise direct power on the woman. The story itself contrasts the earlier example of the woman, who by undertaking the asymmetrical work division/load increased her personal authority.

In other cases women bargain authority by refraining from telling the husband about their own decisions on the crops or the bank account they secretly have.

Thus we want to argue that power is also expressed in more subtle and invisible ways. It can be linked to the idea of local gender contract introduced by Caretta et Al (2014). The example with the cow shows how by breaking the gender contract, the husband experiments drawbacks.

You could ask if this is really liberating women since the material conditions for the women are not necessarily changed by the fact that they exercise resistance when it goes by informal channels or only expressed during interviews with us. However it is still important to highlight the different ways in which both women and men in Kibugu are not just passive, structured masses determined by norms and traditions in society, but are actual and active individuals, who navigate and find ways inside and between the norms and traditions in society

Impact of land inheritance and traditions on young generation rural exodus

According to Ruth K. Oniang'o (1995) Kibugu is a high-potential area with a high population density and with average landholding size four times as small than other low-potential areas (1995). Ruth K. Oniang'o's (1995) study furthermore shows that in 1995, inheritance of land in Kibugu, is much more common than in other low-potential area. Oniang'o explains how traditional patrilineal land inheritance in 1995 is very much evident, only allowing women to own land in cases where the man is absent, as in divorce, widowhood and single motherhood (Oniang'o 1995:56). This seems to be in agreement with the result from our study, that shows that even though women in few cases are able to get ownership of land, land inheritance in Kibugu is still patrilineal and inheritance accounts for the majority of all cases of acquiring land. The examples of women owning land was limited to unmarried mothers and widows. These statuses can thus appear as room of manoeuvre, regarding what was explained above.

As mentioned, the size of the inherited land of each household is small. From the interviews we learned that this causes some people to buy more land elsewhere for agricultural purposes and it also starts to be an issue for young generations and generations to come. Many respondents emphasize on the necessity to leave the farm, buy land or work in town because the land was not big enough for the whole family with several generations.

The rural exodus is a new issue in Kibugu. Many young people believe that working in the city is more lucrative than in the field. Old generations emphasize on that willing because "new generations are lazy", as a farmer stated during an interview. Min-Harris (2010) explain that pattern by the excessive poverty of Sub-Saharan rural areas, the land inheritance tradition and the lack of infrastructure for work, health and education. She describes the situation as even worse for young women. The difficulty to access land ownership for women and the risk of getting married at the earliest age are the main incentives for them to leave rural areas. Furthermore, education remains the most successful pathway for them to improve their condition and gain in freedom. That situation has been correlated by the many women that succeeds at school and get out of university with a bachelor or a master's degree. On the other hand, young women without education were the ones who get married the youngest and had less

power in the household. Unfortunately, the fact that we were able to interview young educated women also shows that education is not always leading to the expected future. Young women were back to their home town because of the lack of work opportunities, the necessity to settle down to raise children, or the lack of money. As a conclusion, a young woman told us that “You see, in Africa, there is so many opportunities. As long as you have ideas, everything can become true”. Rural spaces could be the key areas to start new projects based on horticulture agribusinesses as the necessity for economical development is high, according to Agesa et Al (2001).

Future of Kibugu

As we saw in our research one of the main factors in terms of being successful in the business of horticulture is the access to irrigation. The frustrations on this issue were outspoken in several interviews and partly directed at the lack of help from the government.

When talking with our fellow Kenyan group members we also encountered this frustration with the government, though not specifically on irrigation, but on the fact that they pay around 30 % of their income in taxes in Kenya and have no idea **where the money is going**. For these students, representing the young generation, they expressed that money for infrastructure, public hospitals etc. seems to disappear without creating any benefits for the common people. This creating a lack of trust in the leaders of the society who should be the ones to secure the future generations.

Due to the fact that the young generation is leaving the rural areas we could link this exodus to a lack of trust in the government locally and nationally, to provide the inquired facilities for creating a successful life.

The climate change is increasing the need for irrigation due to the multiplication of drought periods in the area that does enjoy an easy access. Furthermore, government officials underlined the fact that infrastructures - transport systems of farm produce were affected by rain which are more heavy. However, according to them, farmers are really aware about this problem and thus, able to adapt their agricultural production according to this new rainfall patterns. This knowledge and sensitisation about climate change can be provided by the coffee factory, as Jane Njoki, adviser at a coffee factory, told us. This calls for action if there should be any chance that the commercialization of

horticulture can benefit the people living there. One place to start could be organizing irrigation self help groups with support from the government. If such a group had the support of the government it could provide security in terms of avoiding powerful people exploiting the project as it already happened in the area.

Finally, regarding to this context where people do not trust how their money is used by the government, where it exists a strong need for investment especially in irrigation schemes, where the type of money is gender-based and where there exists a strong community building between women, it appears that a local, complementary and community currency (LCC) presents a strong potential on the local agricultural development as well as women's empowerment. Walker (2009) demonstrated the benefits of a LCC on gender relations in Thailand. There exist a wide literature about the benefits of LCCs on the local economic development and resilience as well as on the sustainable development of an area. Actually, five successful examples of LCCs exists in Kenya as documented by Dissaux (2016). The context is thus favourable to such initiatives...

Method discussion

Informal interviews and participatory observation

Casley and Kumar (1998) argue that informal interviews can result in information about local people's personal values and ideas which might be hard to obtain from other methods. This fit well with our experience were we spent several evenings having intimate conversations with our hosts discussing for example Kenyan and Danish customs.

Babbie (2002) discuss participatory observation saying that by just "being there" (p.299) a researcher can gain insights in the complex and rich nature of human affairs. Thus did the method give us information on more unspecific, sensitive and elusive things, which was needed since our focus was on intrahousehold structure and gender relations. One such observation took place when some of our group members attended a local market. In the market these students were followed by a drunk man which led to a group of women to gang up and chase the man away from the market while shouting, "*he can not touch you*". This experience gave us an insight in how women can take action towards men and thus became a contribution to our holistic

picture of our area of study. During daily participatory observations we gained information on daily work tasks but also on the gendered labour division, social norms and family relations that all were expressed in a subtle and unspoken way. But important to remember is that, as Dewalt, Dewalt and Wayland (1998) explain, the observer is a part of the observation and participants can adjust their behaviour since they are being observed.

Questionnaires

In our group the questionnaire was executed by the guides/translators. This was a bit problematic since we did not make a proper briefing to the translators as Parker (2005) explains. This includes making guidelines about formalities and making sure that they are following the meaning and purpose of the questions. For example, in one particular question we got the feeling that one of our guides/translators was asking about crop technologies instead of the actual question on specific storage technologies.

These uncertainties could have been avoided in a higher degree if we had given more firm instructions or led the questionnaires ourselves.

In some of our responses we identified some measurement errors in the answers given by respondents. Statistika centralbyrå describes measurement errors as when a respondent gives the “wrong” answer due to an unclear question.

Semi structured interviews

The reason for why we wanted to use interviews as our main method was to be able to look deeper into, especially farmer's, own experiences, feelings and opinions. Svensson and Ahrne (2011) explain that interviews are a good tool for finding out such aspects about a respondent's life. Regarding possible shortcomings with interviews Eriksson-Zetterquist and Ahrne (2011) argue that the influence of the researcher can be bigger during interviews than in other methods. This was made quite clear early on in our field study since we realised that the different research teams were focusing on a bit different aspects of our study theme. Ahrne & Svensson (2011) also mention how the researcher's expectations can affect the respondents and make them act and answer in a way they had not done outside the interview. Since we within our research teams shifted the task of asking questions it was clear early on that we all had different ways of asking questions and thus could obtain different answers to the same type of

question.

Since we wanted to have a more loose structure and to be able to have more of a conversation with our respondents we decided to use semi-structured interviews. We thought this way of doing interviews would fit our topic better since we were dealing with gender issues which we thought of as a quite complex topic, hence it could be hard to obtain the information we wanted from structured interviews. Using semi-structured interviews made it possible for us to ask our respondents follow-up questions. They were especially asked on more sensitive issues where we felt that we had to dig a bit deeper to get the answers to our questions. Eriksson-Zetterquist et. Al (2011) mention that an advantage with semi-structured interviews is to be able to adjust the interview after the respondent's answer, since this can provide you with deeper and more versatile information.

Moreover we wanted to interview both wives and husbands in the households. In the field it became clear that this would be a hard task since it more often than not were only one of the two present at the farm during the day. But this was not the only issue regarding getting to talk with both the wife and husband of a household. At two separate occasions we had both husband and wife present at the farm but they did not agree on doing separate interviews thus the wives barely said one word during these two interviews, even when we directed the question directly to them. This underpins Alvehus (2013) argument about interviewing respondents separately to avoid interference of other family members or similar, since they can affect respondents answers a great deal.

We got a lot of help from our guide/translators during our field study. Both of our translators became informants and especially one of the guides' personal relations with locals in Kibugu helped us a great deal. Desai and Potter (2006) mention this advantage with translators and explain that they often become intermediaries that open doors. Furthermore our translators helped us a lot with understanding the local context and explaining local behaviour, advantages that Desai and Potter (2006) also mention as common when using a translator. One example of this is when we talked with both a wife and a husband in a household and the husband did not mention the wife's work with subsistence crops. We did not understand why but one of our

translators/guides explained that it could be due to the fact that work with subsistence crops are not regarded as highly as work with cash crops.

We also experienced several issues with using translators/guides.

We were from the beginning firm on getting our translators to inform our respondents that they were anonymous, could interrupt the interview at any time and on asking for permission to record the interviews. After doing a couple of interviews we stopped making sure that our translators actually had forwarded this information and let them do an introduction without our guidance. Thus it is not clear that all respondents actually were informed on these matters. In retrospect we wished that we would have been more clear with our translators making sure that they passed such information on to the respondents. Desai and Potter (2006) also argue that having to rely completely on one person to do your introduction is not to be desired.

Furthermore it was in several cases clear that one of the translators had their own preconceived perception of the society and thus thought that some of our questions were irrelevant. One example is that the translator/guide thought that questions regarding who did the domestic work in the family were a waste of time since that according to the guide/translator always is the women. This is relatable to Desai and Potter (2006) argument where they mention how local translators can be biased due to their own perspective of their own society. Moreover we sometimes had the feeling that our translators did not forward all informations the respondents were saying which Desai and Potter (2006) also mention and explain that translators sometimes filter out parts they believe to be irrelevant. On a final note, since two of the Kenyan students spoke Kiswahili and one of them also spoke the local language Kikuyu they were often used as additional translators. Even though this was seen as an asset in the group it also added extra work for these two students since they had the responsibility of translating some recordings into English, a task that ideally would have been shared amongst all students in our group.

Group dynamic

Our group of eight students consisted of five students from Copenhagen University and three from Nairobi University. In total the group was made up out of five different nationalities Kenyan, Nigerian, Danish, Swedish and French. The students in our group

also had different academic backgrounds, to mention some; Anthropology, biology, environment. This section will analyse our internal group process and discuss some aspects and events that affected our ability to work together as a group and thus the outcome of our report. We will also discuss what we could have done differently to have a more successful group work. Important to note is that the following sections will be based on the Danish counterparts views of the group dynamic.

Different time-lines

The communication in our group failed several times which often led to misunderstandings. The first meetings we had as a complete group were at the time considered as being successful were they Kenyan and Danish students tried to merge their ideas and thoughts on the topic and elaborate methods to be used. In retrospective it is clear that the communication were not working already at this stage and misunderstandings were forming. A disagreement occurred first on Monday morning the 6th of March when the Kenyan students said they did not know that we were supposed to hand out a questionnaire. This was confusing for the Danish students since they thought that a timeplan had been made on Saturday the 4th of March which considered all the different methods of collecting data. Lewicki and Wiethoff (2000) mentions how the most basic form of trust requires that actors simply do what they have promised. The undermining of trust were thus formed early since both the Kenyan and Danish students experienced that the other group were not doing what they had promised. Lewicki and Wiethoff (2000) argue that if people start questioning whether commitments will be followed by action it can result in conflict. At this point the Kenyan students also informed the Danish students about a deadline for a proposal that they had to hand in on the following Sunday the 12th of March. It became clear that the Kenyan and Danish students did not have the same timeplan. Due to the deadline of the proposal the Kenyan students wanted to stop doing fieldwork and start analysing data on Wednesday the 8th of March. This new deadline did not fit with the one the Danish students had been given, were they had been told to do field work until the 12th of march, if needed. Either way the disagreement were solved at that point. The Kenyan students agreed on handing out the questionnaire and the Danish students agreed to strive for finishing data collection on Wednesday and help the Kenyan students analyse data for the proposal. But the new timeline still affected the work and the experience was that all students were stressed knowing that they were supposed to be done with data collection on Wednesday.

On the following day Tuesday the 7th of March two professors, one Kenyan and one Danish had a meeting with all students. It became clear that the Danish students were not supposed to stop with fieldwork on Wednesday but continue as long as they needed. The Kenyan students on the other hand were not given the same information and thus were left with the same deadline as before. Hence did this divide the group into two subgroups with two different time-schedules which created some tensions in the group since the Danish students now had more time in the field than the Kenyans. Another example of miscommunication and a lack of trust in our group is a conflict regarding sharing data, which took place on the Wednesday the 8th of March. One of the Kenyan students did not think the Danish students would share the data they had collected the previous days. The other students on the other hand thought that a decision had been made previous day regarding sharing data, and that this would happen on Thursday morning. Lewicki and Wiethoff (2000) argue that actors in a conflict can have a hard time trusting information provided by fellow actors which possibly can explain why one of the Kenyan students did not believe we would share our data. In the afternoon the same day another meeting were arranged with both Kenyan and Danish professors. During this meeting it became clear that the Kenyan students did not have to hand in a proposal on the following Sunday. Still a big part of our data were collected during these stressful circumstances and it affected the group dynamic both before and after the misunderstanding were solved and the time frame changed.

Decision-making & possible improvements

Our ability to make joint decisions were affected by our group dynamic but probably also by the fact that we were a big group of eight individuals trying to agree. The experience was that it was hard to express an opinion and getting other group members to listen and not interrupt. At the final days of the field work we tried two different strategies to try and get a more pleasant environment during our meetings.

We tried several methods to structure the meetings and it appears that a chairman had positive effect on the overall discussion. It is important to note though that some decisions could be made since group members chose not to express their opinion on the matter, in an attempt to avoid slowing the process down and/or causing a disagreement.

We think that having meetings every night would have improved our communication. We should have discussed how our meetings were going to be structured and how decisions were going to be made. Having a group coordinator arranging meetings and keeping track of which decisions were made could have made our group work easier. A possible way of making decisions that we did not try is using a formal voting process. We think that these suggestions might have helped avoiding some miscommunications we had in our group.

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APPENDIX

Appendix 1 Semi-structured interview guideline

Basic information

Man/women

Age

How long have you been living here?

How many people in your household?

Education level?

Married etc?

Land rights

Who own the land? Have there been any changes (before/today)?

How did you acquire the land (inherent, bought, rent etc.)

More common that men/women own land, if yes why do you think it's that way?

Who has access to the land?

Land use

Size of the land ? (before/today)

What do you grow and for what (consumption, sell, both)

Challenges with production before and now why has there been changes?

Motivations for growing these (money, time, labour, water)

Labour division

What are the duties of each household member?

Has there been a change in labour division? (before/after)

Agriculture tasks such as harvest etc (horticulture)

Reproductive tasks (takes care of children, elder et)

Sells/marketing the product (you, husband, wife, son, daughter other relative etc)

Men and women usually have different duties in the household?

Knowledge

Climate change?

Technology (irrigation etc)?

Commercialization

Inputs (fertilizers, pesticides, seeds etc)

Insurance

Credit (loan of money, fertilizers, seeds etc)

Finance

How do you obtain knowledge? Men and women obtain knowledge in different ways?

Easier for men in general to obtain knowledge? If yes why ?

Outcomes (benefits for who/drawbacks for who)

Income

- Who gets incomes?
- Who controls income?
- Spend money on what?
- Bank account?

Income = sensitive subject so do not ask directly about it but instead for e.g ask how "others in the village" divide/spend etc income spending the money in the household "how does this work in the village, who in the household are often in control over income? More often men than women, older, younger etc? Does lucrative horticulture productive change power over income from the production? If No/yes why do you think that's the way?

If you are talking to the person without for e.g the control over the income try and ask if he/she disagrees with this division just "what do you think about this would you want a change, why yes/no"

Bargaining power

Food security

Food security better after starting selling horticulture crops, the same, or worse?

Did they produce cash crops before (coffee, tea etc) but now they are producing "new cash crops (horticulture)" which they also can eat, does this affect food security?

Education (can also be sensitive if question about how pays for education)

Change in who pays for education in the village (used to be man, now women?), is this about to change, if yes/no why?

Easier to pay for education now, due to horticulture crops?

Labour division

Changes after horticulture crops? More, less work? Is there in general in households a change in labour in the village after horticulture? Why would you like a change?

Market

Participation in market, sell the product has there been a change? Usually man that go to market or woman? Why? Would you like a change?

Appendix 2 Table of used methods

Informal interviews

- 3 informal interviews

Participatory observation

- 1 observation of a chama meeting
- Unrecorded amount of observations made during the field trip

Questionnaire

- 95 questionnaires

Semi structured interviews

- 2 key informant interviews
- 34 interviews with farmers
- 1 group interview

Appendix 3 Crops grown in Kibugu

Crops grown in Kibugu include for example coffee, tea, macadamia, banana, avocado, maize, beans, watermelon, tomatoes, carrots, passion fruit and mango. According to the questionnaire (figure x), coffee and banana are grown by almost all the households in Kibugu. Kale, avocado and macadamia are grown by more than 50% of the respondents while tomato, potato and mango are grown by 40-50% of the respondents. Tea is grown by 28% of the respondents. Passion fruit, carrot, butternut, watermelon and arrowroot are the less frequent crops grown by our respondents (less than 20%). Other crops that have been mentioned by our respondents are khat, sweet potato, papaya, coriander, pineapple, apple, cassava, pumpkin, bean, tree tomato, maize, cabbage, yam, spinach and sugarcane. We do not have quantitative information about these crops but thanks to our observations, secondary data and interviews, we can assume that maize, bean, sugarcane and cabbage are grown by a large proportion of households, but mostly as subsistence crops. The questionnaire data reveals that most of the households in Kibugu did not implement new crops over the 5 last years (around 70% of our respondents). Among the 32 respondents that made a change, 78% have implemented new horticulture crops such as tomatoes, kale, watermelon, coriander, watermelon, pumpkins, spinach and carrots (figure x). In addition, the government officials underlined that coffee and tea have been the major cash crops in the area for a long time, but this has changed over the years by which there has been a shift to plant horticultural crops such as cabbages and kales which has been grown in kitchen gardens before but are now becoming more commercial.

Appendix 4 Detailed analysis of the three livelihood strategies

Type 1: Seasonal sellers

Type 1 is composed of eight households, six located in Kathakwa and two in Kithiria.

Six of these households consist of married couples, one is a widowed woman and one is a widowed man. This category does not include any younger people (under 30 years old). Five of these households are elders (above 60 years old) and three of them are between 40 and 60 years old. Five households are smallholder farmers owning less than 2,5 acres. Three households have bigger land, respectively 3,5 acres, 4 acres and 5 acres. In this type all land is owned by men except in one case where a women inherited the land from her husband after he passed. One of the smallholder farmers have bought additional land. These households grow mostly coffee, hence is coffee their main source of income. Two of these households also grow tea and six of them grow macadamia nuts as cash crops.

Six of the households in type 1 are living in Kathakwa where the access to water is limited, thus irrigation as well. One of them, which has the biggest land, is harvesting rain in a container during the rainy season. Another male farmer mentions that they tried to implement a kind of irrigation cooperative but that it failed since other people got the finance instead of them and hence, "stole the water". Two of the households in type 1 are located in Kithiria. One of them does not use irrigation and the second pays for irrigation through a self-help group but does not use it extensively since it is expensive . Furthermore six households explicitly expressed that they are limited by lack of water and that they would like to grow more horticultural crops. Some farmers also mentioned that they would like to grow horticulture to gain better food security, one farmer said "*we cannot eat coffee*" another reason mentioned was increased financial security. Two of them also said that they would uproot coffee to plant more horticulture crops in the case they would have access to irrigation and/or bigger land. As a result, these households are not growing horticulture as an agribusiness but mostly for self-consumption. When these households horticulture crops it is during the rainy

season and when they have surplus. We noticed that the horticulture crops they grow are mostly drought resistant crops such as banana, beans, kale, sweet potato and spinach. It thus appeared that these households do not grow a wide range or large quantities of horticultural crops.

Concerning the access to workforce seven households casually hire labor, mostly for picking coffee beans. One driver for this could be the high age of farmers in type 1. Furthermore it seems like the men in type 1 are responsible for the coffee production and also in control over the income from it. But in this group women seemed to work more than their husbands, it was mentioned that women did most of the agricultural and reproductive work. One household in Kathawa, that was growing mostly tea and coffee divided the labor and outcomes depending on the type of cash crop. In this household, the woman is responsible of tea production and get income from it whereas the man is responsible for the coffee production and get income from it. In this case, the wife pays for food, tea inputs and labor. The husband pays for water, electricity and coffee inputs.

In type 1 farmers have obtained knowledge differently. Farmers mention obtaining knowledge from coffee cooperatives and experience/ observation. Two female farmers expressed that they had obtained knowledge from their husbands. In this type 75% of the women are members of a chama where some mention that they can credit facilities and meet with friends. In all households men are members in a coffee cooperative, in one household the wife is also member. In three households, it is clear that the men are the ones who own the bank accounts connected to the coffee cooperative. In four households, men and women have separate bank accounts. However, these women do not seem to have more liberty since they are restricted in how they can spend their money since they women in this type are responsible of paying for the households basic needs. Water and electricity can be paid by men from coffee profits as mentioned by one male farmer.

Type 2: Surplus sellers

Type 2 is composed by eight households, seven located in Kithiria and one in Kathakwa. Out of these households all consisted of married couples except one. Half of the households had land of two acres or smaller. The other half of the households had a plot that is bigger than two acres. In five out of eight households the man has inherited the land from his father. In

household type 2 there is one single woman who has inherited land from her father. The ages of the households in type 2 are mixed ranging from 24 up to 53 years old with two young households (below 30 years old). Hence, it does not include elder people (above 60 years old).

In type 2 there is one household without irrigation and five with. Among the five with irrigation, one uses a fed-pump, three of them live close to the stream and use piped gravity flow water delivery and the last one declare to use buckets. In two cases we miss information on whether they have irrigation or not. All the households in this category grow coffee, one of these consist of a single women. Five households express that coffee is their most important crop. The reasons they give for this are that they earn more money on coffee than on horticultural crops but also that the money from coffee pays school fees. Two of the household also grow tea and five grow macadamia. These households grow between two and eight horticulture crops such as banana (4), cabbage (4), beans (4), kale (3), cassava (1), sweet potato (1) - which are drought resistant crops - and arrow roots (2), avocado (2), passion fruit (1), tomato (2), and carrots (1), which are non-drought resistant crops. We notice that the household which did not use irrigation grow drought resistant crops and the ones with irrigation grow a larger and more diverse quantity of horticulture crops. Thus the households localised closest to the river are the ones growing arrow roots, tomatoes, pumpkins, passion fruit and carrots.

Two households mention that they hire workers and three says they have off-farm work.

In group 2 there are three households that state that the women is a part of a chama. All men in the households have memberships in the coffee cooperative. Furthermore four women, one of them single, say that they get the money from the horticulture. But of these four, two women say that these money are meant for household expenses. One of the other two women pay chama expenses with the income from horticulture and the other women, who is single says she decides for herself on how to spend the money she earns. One wife in one of those households say that her husband always gives her money when she asks. Only one woman, who is single, says she gets the money from the coffee she produces.

In type 2 farmers have obtained knowledge in different ways. Farmers mention obtaining knowledge from coffee cooperatives, extension officers and from experience/observation. Four female farmers said she had obtained knowledge from a male figure in their households. In three of the households they do not specify where they have gotten the knowledge. In one

household the respondent says all members of the family has knowledge, in another that the wife has more knowledge in general but husband knows more about traditional cash crops.

Type 3: Business sellers

Type 3 is composed of thirteen households, all households except one in this type are located in Kithiria. All households consist of married couples except one male farmer who is engaged. One of the households consists of a couple under 30 years old, eight households consist of farmers above 30 years old and in four of the households the farmers are more than 60 years old. In this category, there are eight smallholder farmers with less than two acres and five bigger farms in which one is 20 acres. In type 3 the men own the land and acquired it through inheritance. Three households has bought additional land: one household with a small farm has bought land for growing horticulture, one other small farm for growing horticulture, one large farm for growing coffee and another large farm for growing both horticulture and for coffee. According to their income and/or their type of house and/or the livestock, it appears that this household type seem more wealthy than the other two household types. The households in this type all grow coffee, except one which uprooted it for growing tomatoes (see below). Macadamia appears in this category as a new important cash crop. This is underlined by the fact that the wealthiest and biggest household is replacing banana trees with macadamia trees because of the good price of macadamia nuts on the market.

All households in this type have access to water but use different irrigation schemes. Most of them, thanks to their localization (altitude, slope, distance to the river), utilize piped gravity flow water delivery. Four households have pumps which is the most expensive irrigation scheme. These pumps allow these households to access irrigation and go over their geographical limits (altitude, slope, distance to river). Among these households, two obtained fed-pumps through a self-help group which in turn gets financial help from the government to implement these pumps. In this case, they still have to pay monthly to the government but at a discount price (100 shilling per month). The two other households paid for their fed-pumps themselves. Finally, the household located in Kathakwa in type 3 benefits from free irrigation (pumps and ditches) from the coffee factory.

Thanks to their access to irrigation, they are able to grow a large and diverse quantity of horticulture crops along the year. They grow between 4 and 8 different horticulture crops.

Some of them are not drought resistant such as watermelons (5 households), tomatoes (9), passionfruits (5), avocado (5), papaya (1), arrowroots (1), butternut (2), french beans (1), courgettes (1), coriander (3). They also grow more drought resistant horticulture crops such as kale, spinach, capsicum, beans, sweet potato and banana. Four households grow mango but as a subsistence crop. The households that grow watermelon and/or passionfruits are the wealthiest ones and two of them use fed-pumps. In addition the household which only grow four different horticulture crops also is the one with the smallest piece of land (0,5 acres) and seems to be the least wealthy in the group. The households with the greatest diversity of horticulture crops on the other hand have the biggest farms and seems to be the wealthiest.

In five households, the husband has an off-farm job and in two, the woman has one. Concerning the workload division, five households, the wealthiest ones, employ permanent and temporary workers. For example the biggest and wealthiest farm of this category, employs four permanent workers which are doing domestic work and productive work. Furthermore in this category six households expressed that women did most of the work with horticulture crops. In two households the men were responsible for the horticulture crops (watermelon and tomatoes). The men in this type seem to have become responsible of horticultural crops when these crops become an important source of income. In type 3, incomes from the coffee are deposited into a bank account controlled by men. One woman said that she could not decide how the money from coffee sale is spend. Most of the women in this type get money from selling horticulture crops. Two women said they can ask their husbands for money to pay the chama fee. Notable is also that the wealthiest household has an insurance on their coffee and they use loans since *"they can't do without loans"*, as a farmer puts it.

In type 3 farmers have obtained knowledge differently. Farmers mention obtaining knowledge from coffee cooperatives, experience/observation and learning from friends. One female farmers said she had obtained knowledge from her husband.