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Commercialization and Modernization“

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Introduction

With growing academic recognition of the dramatically increasing body of evidence of the unsustainable nature of agriculture as it is currently practiced in many parts of the world, as well as the vast number of two billion people with micronutrient deficiencies, one billion people suffering from hunger, contrasted by an even larger number of people struggling with overweight, renewed attention has been directed to sustainability in all of its forms (Burlingame 2010: 7). Agrobiodiversity has been recognized as a strongly influencing factor, be it for better balanced diets as well as for a more eco-friendly agriculture. In this manner the concept of “agrobiodiversity” is increasingly linked with the emerging issue of “sustainable agriculture” and “sustainable diets” in exploring solutions to the problems of environmental degradation and malnutrition in its various forms.

East Africa, where I participated in a research project and conducted empirical research for this thesis, has a great environmental variety and a complex mosaic of agro-ecological zones. In addition to spontaneously growing species, the different ethnic groups have introduced a high diversity of crops and animals. Unlike with wild biodiversity, humans are inseparably linked with the maintenance of agricultural biodiversity with regard to the use and utilization. Protection in the sense of ‘leaving it alone’ does, therefore, not suffice (Wolff 2004: 1). Remarkably, the world’s poorest farmers, the smallholders have been recognized to be the creators and guardians of genetic diversity. Their home gardens are important sites exhibiting high plant and animal species diversity that is maintained through management to match not only market demands but also food preference (Coomes, Ban 2004: 220; Worede 2012: 102). The different species in the gardens are characterized by relatively low but stable yields, a close association with traditional cultures deriving from the people who developed them and a specific adaptation to the environmental conditions of the area in which they are cultivated (tolerance to the biotic and abiotic stresses of that area) (Brush 1992: 161-185; Negri 2007: 3). In this way, agrobiodiversity is essential for the productivity and food security of small-scale farmers. A low agricultural biodiversity implies higher susceptibility to any potential danger; it increases vulnerability to climatic and other stresses, and can undermine the stability of agriculture, especially for African small-scale agriculture, which is still heavily

dependent on nature (Thrupp 2000: 285).

Unfortunately, these sophisticated and appropriate land-use systems that guaranteed the survival and further development of agrobiodiversity over centuries are under pressure. Since the beginning of the colonial period, European authorities tried to integrate subsistence peasants into the cash nexus in an attempt to reach a larger output from agriculture. Jennings (2008: 39) states: „It was a question that had exercised colonial planners since the earliest days of seeking to turn from subsistence farmers into cash-cropping, export-minded, capitalist farmers.” As the smallholders are replaced with more “efficient” farmers, the loss of diversity of their landraces progresses (Worede 2012: 102). According to the world-system and food regime theorists, to whom I will devote an important part analysing the agricultural development since colonialism, capitalism is fundamentally changing the ways of production in countries of Sub-Saharan Africa. The integration of agriculture into the world capitalistic market degrades these “peripheral” economies of the present world system to suppliers of agricultural products (and other raw materials) and is thus promoting the commercialization of traditional farming systems. In this way, the spreading modern capitalistic agriculture is globally encompassing both rich, large-scale family farming, and agrobusiness corporations – both of which are characterized by high productivity, a high degree of specialization and the reliance on an increasingly narrow and homogenous group of genetic resources. Abundant evidence indicates that intensive (particularly commercial) agricultural production is one of the main reasons for shifting the balance toward a decline of agrobiodiversity. Still today, the prevalent development model promotes the integration of remote communities in Uganda and Tanzania into the market economy through the industrialization of agricultural production.

The aim of this study is to analyse the impact of commercialization and modernization on agrobiodiversity in Uganda and Tanzania. Because of the direct relationship between agricultural biodiversity and small-scale farmers, the central challenge is to assess the extent to which small-scale systems have been threatened by these agro-economic policies. Hence, I will analyse how far different leaders and planners (whether colonial, capitalist or socialist), have succeeded to modernize smallholder agriculture according to their ideas. The study is a historical analysis of agricultural development in Uganda and Tanzania with a special focus on two

particular regions: Bukoba district in Tanzania and Kiboga district in Uganda (where I conducted empirical research), starting at the point where their agriculture has been integrated into the world economic system – namely in colonial times. In order to show possible solutions, I will also discuss models of sustainable agricultural development, and their ability to reconcile food security and conservation of agrobiodiversity.

However, this thesis is not just about factors influencing agrobiodiversity, the history of modernization and commercialization in East Africa, and possible solutions to maintain agricultural biodiversity. It is also about researching agrobiodiversity per se - about potential inadequacies in my research approach¹. These shortcomings in the chosen methods and their implementation have in fact led to the change of the research question and design, and should thus be discussed as well.

After a short introduction to the research project I participated in, I will write about methodical aspects of the thesis. This is followed by a detailed description of the study site and theoretical insights based on agrobiodiversity studies with particular emphasis on factors influencing the decrease of agricultural biodiversity and the importance of so called food systems in this regard. The World System theory and the Food Regime approach will help to understand the mechanisms and the extent to which capitalism, dominant on the world scale, has subordinated and consequently distorted peasant modes of production since colonialism. This analysis allows an approximate picture of the extent to which agrobiodiversity has been threatened through modernization and commercialization of agriculture. Subsequently, the question emerges whether the development of the agricultural sector has inevitably occurred at the expense of agricultural biodiversity and small-scale systems and I will point out alternatives to the current dogma of agricultural modernization.

The final chapter reflects on the challenges in the field and will describe how I realized which fundamental achievements have to be reached before conducting a research. It is about researching agrobiodiversity per se and thus about the methodology of research on agrobiodiversity. Methodology in this context is not to be understood in reference to the body of methods – “the system of methods and

¹ I have participated in a quantitative study in Uganda and Tanzania and my initial research question was based on this study. However, due to various challenges (which I will discuss in this thesis), I will not write about these results. I will integrate the experiences and observations I made during the

principles used in a particular discipline” (Collins Dictionary), but in reference to the original sense of the word – “the branch of philosophy concerned with the science of method and procedures”, the “theoretical analysis of the methods appropriate to a field study²” (Collins Dictionary). The final chapters of the thesis are thus dedicated to reflections about the methods used and the scientific evolution of this thesis.

The necessity for writing these supplementary chapters has emerged from diverse difficulties and inadequacies I encountered during my research in Uganda and Tanzania that finally led to the change of research question and design.

Writing this thesis has been an adventure, a long journey and a great challenge. It has been a thrilling experience not only on an intellectual level, but also personally and it has partly also been a disillusioning task. Research can be a really frustrating job!

In these months I hit a glass ceiling more than once.

During my university years, I was taught a critical access to texts and how to write scientifically, but I was not prepared for fieldwork. I knew empirical research is no cakewalk, but what is a passable level of difficulty? To what extent are my scientific research claims romantically idealized and where are the boundaries and limitations of science? What role should cultural and ethical issues take on? When is it necessary to depart from original ideas, initial research designs or even the scientific question? All these questions have accompanied me during my research in the field and have initiated the development of this chapter³. Writing about the shortcomings of a research approach is a very delicate matter. It was stylistically and structurally a big challenge for me. However, it is the necessary departure from representing research as an idealized form of successful, unbiased science.

² The misuse of *methodology* obscures an important conceptual distinction between the tools of scientific investigation (properly *methods*) and the principles that determine how such tools are deployed and interpreted. (The Free Dictionary)

³ The discussion of these “problems” is rarely encountered in scientific publications. I see this as a major shortcoming, because all these experiences have significantly influenced this work and I consider their epistemic value as the highest in my work. The place I conceded to them was, therefore, still not sufficient.

Hypothesis and research design

The insight that it was necessary to break away from the idealized notion of research as the epitome of successful, unbiased science has also determined my choice with regard to the research design. The research design employed in this thesis is similar to what Gerring (2001) refers to as the “exploratory” model. Exploratory research is based on an explicit recognition that all inquiry is tentative; because during the research the categories and theories we use to explain reality might grow out of our own minds (Reiter 2013: 3). In opposition to the “confirmatory” model of research, which is mainly based on proving or corroborating a previously stipulated hypothesis and expects to confirm certain laws, regularities, or conditions, the exploratory model requires researchers to investigate how much a given theory can explain and how well it can explain it, how much sense it makes, under which circumstances, or to what extent, a theory is true or false (Rud 2013: 87; Reiter 2013: 1). My empirical work was based on the confirmatory access, and I encountered major difficulties in dealing with it. This was a key reason why I have changed my research design and why I will now only use empirical data that fit my exploratory access (i.e. data from participant observations).

The theoretical framework and the literature review provide an initial starting point for the development of the research project and the hypotheses. Since we can only relate to the world by applying our own mental categories, words, and frameworks, there is no perception of the world free from theory. Hence, a pure exploration that starts from scratch is impossible (Reiter 2013: 4). Exploratory research, similar to confirmatory research, needs to start from an explicitly formulated theory and clear and precise hypotheses that I will provide in the following paragraphs.

Accordingly to my hypothesis, the type of commercialization and modernization that has been promoted since colonialism through the world economic system, exerts a negative influence on small-scale agriculture and is thus endangering agrobiodiversity.

This hypothesis is suggested and scientifically well-supported by a) theoretical insights from agrobiodiversity research as well as by b) World System – and the Food

Regime theorists (e.g. Samir Amin, Philip McMichael).

a) There are several publications that describe a negative correlation between commercialization/modernization and agrobiodiversity. Agrobiodiversity is seen as the anti-thesis opposed to the current modernisation- and commercialization efforts in the agricultural sector, since the latter are characterized by large-scale, highly specialized farming systems and the use of very few, genetically homogenous species. The most significant publications that underline this negative correlation have been written, among others, by Carlton (1982), Dumanski et al (2000) Kaihura (2003), Benin et al (2004), Gauchan et al (2005), Major et al (2005), Rana et al (2007), Herre (2008), Khumalo (2012), Negri (2005), Wolff (2004).

b) The World System theory is a developmental theory and a mode of analysis that examines world history and social change. The Food-Regime approach in turn is used to understand the changing dynamics of food systems and being based on World System theory, it views agriculture and food in relation to the development of capitalism on a global scale. A central assumption of both theories is that the geographic expansion of the capitalist world economy alters political and economic systems (and as such also agriculture) wherever it was able to intrude. According to these theories, capitalism promotes an intensive, commercial agricultural production, because broader imperial interests still influence agricultural development in the Global South. This is also reflected in the developments in Uganda and Tanzania.

The thesis will be divided into two parts, a theoretical part dealing with the research aim about assessing the extent to which small-scale agriculture and agrobiodiversity have been affected by modernization/commercialization efforts, and a reflexive part that investigates how research on agrobiodiversity can be carried out.

Methods

In this chapter, I will start by providing a short introduction to the research project and will further explain my methodical approach. I have used a varied mix of methods: My research was based on a literature review combined with empirical research that included qualitative and quantitative methods. The most suitable of these empirical methods turned out to be the participant observation, upon which much of my knowledge about the region is based. The use and combination of this high variety of methods, was less important for the discussion of the research topic itself than for becoming familiar with the research site and the reflections on the research activity.

The research project

In the period from November 2012 to March 2013, I had the opportunity to spend 8 weeks in East Africa where I worked together with a research-for-development organization called *Bioversity International*. I participated in their research project called „*Improving Nutrition with Agricultural Biodiversity - Developing agrobiodiversity-based strategies for the alleviation of micronutrient and protein deficiencies among smallholder households in banana growing regions of East Africa.*” The project is being funded by Austria Development Agency and is implemented in Kiboga-district, Uganda, and Bukoba-district, Tanzania. The duration of the project is scheduled for three years – it started in July 2012 and will end in June 2015. The purpose of the research project is the development of strategies using agrobiodiversity for improved access to diversified diets targeting vitamin A deficiency, iron deficiency anaemia and protein deficiencies among children aged 6-59 months from rural, banana-dependent smallholder communities.

My involvement in the research project

At the time of my stay, the project was in its initial phase. Empirical research was conducted at rural smallholder communities in central Uganda (Kiboga district) and in north-western Tanzania (Bukoba district). As a reaction to the preparatory literature review, I became aware of the importance of familiarizing myself with my study site and conducted a participant observation in Kiboga, Uganda. Subsequently, I had the privilege to participate in various research activities of the organisation: one

stakeholder meeting in each of the two districts, several focus group discussions in Bukoba district (Tanzania) and a household survey, also in Bukoba district. These methods had already been developed by the research organization. However, I will not use the data directly obtained through the methods carried out with the research organization, since I regard their implementation critically to some extent. Nonetheless, I will use the field notes I took during the implementation of the surveys. I will explain the reasons for this decision more explicitly in the chapter "Problems during the field research". Most of the information presented in this thesis has been generated by a broad based literature review, my field notes from the household survey, and to a very limited extent, on data from the focus group discussions held in Bukoba (Tanzania) and the stakeholder meeting in Kiboga (Uganda).

Methods used

I will now describe the methods, some of which were developed and carried out exclusively by me (literature review and participant observation), and others which were developed by the research organization, yet in whose implementations, I have participated (focus group discussions, household survey, and the stakeholder meeting, of which I was not completely satisfied). The main question of this paper - namely to what extent modernisation and commercialization efforts have threatened smallholder agriculture - will be answered on the foundations of a broad-based literature review, completing those theoretical findings with data from the empirical methods (mainly participant observation and to a small extent focus group discussion and the stakeholder meeting). For the critical review of the second research object – hence the research on agrobiodiversity - I chose an approach based on the experiences I gained during the household survey, which I will incorporate in methodological literature.

a) Participant observation

I carried out two types of participant observation: a “customary” one in Kiboga district (Uganda), where I spent four full days in a rural village, lived in the farmers’ household and observed their daily routines. The other and less typical type of participant observation was an observation which I carried out during the

implementation of the household survey in Bukoba district (Tanzania), where I observed how the research activity was implemented.

In both cases, the implementation of the participant observation proved to be difficult because of the language barrier: I could neither speak Luganda, which is spoken in Kiboga district, nor Kihaya, spoken in Bukoba-district, well enough to achieve a satisfactory level of mutual understanding. However, it might also have been due to my role as an outsider that I noticed aspects, which my East African colleagues did not take notice of.

- *Participant observation in Kiboga, Uganda*

My aim was to gain a close familiarity with the smallholder households and their practices through an intensive involvement with the people in their cultural environment. I originally selected 3 peasant households from three different wealth categories (“wealthy”-, middle- and lower class) that I would accompany for a 24-hour daytime period in order to get accustomed with the daily practices and routines. However, only the family from the wealthiest category could accommodate me over night⁴. Ultimately, an allocation period of 2 times 24 hours could be documented for the wealthiest household, and the other two households could each be documented for about 10 of their waking hours. I decided to choose a moderate type of participation; I participated in many but not in all activities, trying to maintain a balance between “insider” and “outsider” roles. I tried to get into conversation with all sex and age groups, although this was partly hindered by my language problem and the initial shyness of women and girls. Discrete notes were taken of activities in which the observant engaged and what the people told me about their social habits, agriculture, and nutrition.

- *Participant observation in Bukoba, Tanzania*

I also conducted a discrete participant observation during the implementation of the quantitative household survey in Bukoba, Tanzania. Since I could not interview households on my own due to my lack of language skills, I carried my field diary with me and used the time in the field for observations. I documented the different steps of the implementation, e.g. the teaching of the questionnaires to the enumerators

⁴ Due to the little huts and the size of the households, there would not have been sufficient space for me to sleep, not to mention that it would have been too intrusive.

who carried out the questionnaires with the farming households, and then I accompanied the enumerators to the single households, kept myself in the background and took notes about their inquiries, the problems and difficulties encountered during the implementation, and the living circumstances of the research-subject.

b) Household survey

The household survey represents the main source of data for the research project I participated in. It was developed by several researchers (nutritionists and agronomists) from the research organization *Bioversity* in Kampala, Uganda, as also involving an American agricultural researcher.

The household survey consisting of two extensive questionnaires was conducted in both districts, whereby I participated only in the implementation in Bukoba, Tanzania. Following multi-stage sampling techniques, localities, parishes and villages have been drawn from the two districts. Based on secondary data, Fisher's formula was used to establish the sample size of about 220 farmer households per district and systematic random sampling was used to receive the specific households to be interviewed during this diagnostic survey. The first questionnaire (household/nutrition survey) was conducted with the mothers as respondents and the second (production survey) with the (male) household-head as respondent:

- The **household/nutrition survey** generated a detailed analysis of the household demographic and socio-economic structure (wealth, livelihood strategies, etc.) as well as dietary patterns and nutrition status of rural smallholder households (with a particular emphasis on children between 6-59 months).
- The **production survey** aimed at acquiring a better understanding of the agro-ecosystems and food production strategies. We asked for the kind of inputs used, the constituents of agrobiodiversity (crops planted, animals grown and wild species gathered or hunted), the quantities of each species as well as its utilization (sold, consumed in the household, used as fodder etc.).

c) Focus group discussions

Focus group discussions were carried out in two sub-villages of Izimbya ward, Bukoba district, Tanzania (so far, none have been held in Kiboga district). In each sub-village the participants were divided into groups of 10 to 15 and according to gender. There were 6 focus group discussions and in total they included 2 groups of 14 and 17 women and 4 male groups of 10, 13, 11 and 15 members. The aim was to acquire rainfall-patterns, identify soil and land types and to identify common meals and agrobiodiversity in food (crops grown and gathered, animals reared, trapped and hunted, and food items mainly bought or received as an aid or donation) as well as its annual availability. In addition, household characteristics such as land size, education/knowledge level of household members, and income levels were defined and reviewed to ascertain which factors could influence agrobiodiversity.

d) Stakeholder workshop

One inaugural stakeholder workshop was organised in each of the districts/countries and, particularly in the case of Kiboga district (where no focus group discussions were held), actually provided very interesting information about agrobiodiversity and household characteristics. The participating groups in the stakeholder workshop consisted of representatives from farmer associations, women's groups, the primary education department, the health/nutrition sector, the local government, the agricultural sector, religious organizations, local NGOs/CBOs, national universities and Bioversity International. They provided us with interesting general information about the area. In participatory exercises, local crops and animal species were discussed as well as common meals in the households, food availability patterns, and child feeding practices. In Lwamata sub-county, Kiboga district, Uganda, the total number of participants was 48 including 32 men and 16 women. In Izimbya ward, Bukoba district, Tanzania, the total number of participants was 30 consisting of 16 men and 14 women.

e) Literature review

The literature review includes historical publications (from colonial times onwards), agro-economic reports from various institutions, insights from agrobiodiversity research, and theories belonging to Marxist approaches, namely the World System theory and its derivative, the Food Regime approach. I will refer also to primary sources from the 1980s and earlier. I am aware that the sources are not very recent, but I consider them as still valid and meaningful.

However, the research set-up has different limitations since the availability and accuracy of agrobiodiversity-related data about Tanzania and Uganda as well as historical data after independence were unsatisfactory.

While there are plenty of publications that theoretically analyse agrobiodiversity and its influencing factors, there is scarcely any detailed information available on the actual state of agricultural biodiversity in Uganda or Tanzania. No detailed information was available about the extent of agrobiodiversity-reduction and genetic erosion, neither could be determined to what degree this has been caused by human intervention ⁵. Especially regarding animal-related agrobiodiversity, only a proportionally very low number of publications can be found⁶.

There are sufficient historical sources about agriculture during the colonial period in Uganda and Tanzania; even publications about the two districts Bukoba (Tanzania) and Kiboga/Buganda (Uganda) at that time could be found. However, there are fewer sources on the agricultural history of Tanzania and Uganda after independence. Tanzania is still far better documented than Uganda, but in any case, no or only marginal information could be found about the two districts. That is why the agro-historical analysis after the colonial period increasingly refers to the developments of the larger region or the nation.

⁵ In the face of the rising population growth rate, high poverty and undernourishment rates, agrobiodiversity is definitely perceived by government as well as local scientists as a second-order problem. This is also reflected in the modernization programs that still mainly focus on the introduction of exotic, highly productive plants and animals.

⁶ This allows for the conclusion that the biodiversity of farm animals as well as plant-related agrobiodiversity currently plays a subordinate role. Many publications that revolve around Plant Genetic Resources even use the term agrobiodiversity as a synonym for plant diversity. This is also the evidence of a partial lack of clarity in the use of the terminologies in science.

The choice of study site

The two districts Bukoba (Tanzania) and Kiboga (Uganda), in which I conducted empirical research and to which I will, therefore, devote particular attention, are approximately 300km apart from each other and are characterized by similar climate conditions and a similar agricultural system. Smallholder agriculture in both nations has faced numerous constraints. While some constraints are unique to each of the countries and districts, most are of a similar nature. As we will see in the central chapters of the thesis, they have a shared history in many regards. Therefore, although regional diversity makes generalizations difficult, the study draws some overall conclusions.

To study one single country/district would certainly have been more than enough for a diploma thesis. But since I credit much of my knowledge, as reflected in this thesis, to the participant observations in both Kiboga and Bukoba district, I considered their value too high to relinquish/renounce the findings of one of them. The insights I have gained from each of these activities have been of great importance.

The study site

In this study site description I will provide first each a short country and district description with some geographical, demographical and historical information, then I will give a brief introduction to the agricultural system of the two study sites, and finally a detailed description of the socio-cultural characteristics.



Figure 1: A map showing East Africa⁷

United Republic of Tanzania

Geographical characteristics

The United Republic of Tanzania, which comprises the Mainland Tanzania and Zanzibar Islands, is located south of the equator in East Africa. It is encompassed in the north by Uganda and Kenya, in the east by the Indian Ocean, in the south by Mozambique and Malawi, in the south west by Zambia, and in the west by the Democratic Republic of Congo, Burundi, and Rwanda. Tanzania is a country of highly varied geographical features with a total area of 945,087 km². Africa's three great lakes Victoria, Tanganyika, and Nyasa are partly in Tanzania. The climate varies from tropical along the coast, to temperate in the highlands. Tanzania has two distinct rainy seasons (long and short rains) in the north, from November to December and from March until the end of May respectively. A total of 38.8 million hectares (43.9 per cent of Tanzania's land area) is classified as forest. Elsewhere, there are tropical zones, steppe and savannah grasslands, and some areas are semi-arid.

⁷ <http://victoriafalls24.com/wp-content/uploads/2013/08/EAC-UNIVISA.jpg>

Population

Tanzania has a great cultural and linguistic diversity. Based on census estimates from 2006, Tanzania's population is estimated at about 39 million people with a growth rate of 2 per cent per year. Nearly 77 per cent of the population live in the rural areas. The population density is 40 inhabitants/km². The vast majority of the population live inland, far away from the coastline. Poverty is concentrated in the rural areas; however, urban poverty has accompanied rapid urbanization. Tanzania has an HDI value of 0.476 and thus belongs to the lowest of the four Human Development Index classes. Life expectancy at birth is 58.9 years.

Shortly after achieving independence from Britain in the early 1960s, Tanganyika and Zanzibar merged to form the nation of Tanzania in 1964. Julius Nyerere was the first President of Tanzania from the founding of the country in 1961 until his retirement in 1985. One-party rule came to an end in 1995 (The Encyclopedia of Earth; UNDP 2012).



Figure 2: A map showing the location of Bukoba rural district in Tanzania⁸

Bukoba rural district

Bukoba rural district in Tanzania has a population of about 400,000 people and consists of 90,000 households (2003). Rural Bukoba is part of the Kagera region that is situated just south of the equator, in the north-western corner of Tanzania. The Kagera region was formally known as the West Lake region and was renamed Kagera region after the war between Tanzania and Idi Amin of Uganda. It shares borders with Uganda in the north, Rwanda and Burundi in the west, the Kigoma and Mwanza Regions in the south and Lake Victoria in the east. Bukoba rural district lies at 1100m above sea level on average (www.kagera.org).

For a period of about five centuries, Kagera Region had 9 different Kingdoms and a highly hierarchical society. It was during this time that coffee was introduced as a

⁸ http://en.wikipedia.org/wiki/File:Tanzania_Kagera_location_map.svg

cash crop and bananas as a staple food. The Germans, who colonized Tanganyika in 1890, took the regimes of these kingdoms, and later the British took over from the Germans. The demise of these kingdoms came after Tanzania had gained its independence and president Nyerere saw them as detrimental to creating national unity (www.kagera.org).

The **Haya** are the main ethnic and linguistic group based in the Bukoba District.

Swahili is Tanzania's national language and is spoken throughout the country. However, most people speak their own tribal language as well. In Bukoba, Kihaya is the main tribal language. English is taught as a subject in primary school and is the medium of instruction from secondary education upwards.

Republic of Uganda

Geographical characteristics

Uganda is a landlocked country located in East Africa. It is split by the equator, bordered by Sudan in the north, Kenya in the east, Tanzania in the south, Zaire in the west and Rwanda in the south west. The total land area is 236,000 km² and most of the country lies within an altitude of 900 – 1,500m above sea level. Mean annual maximum temperatures range between 18-35°C and relative humidity is often high, ranging from 70 to 100 per cent. Most parts of the country have two rainy seasons, April-May and October-November. Uganda is a fertile, well-watered country with many lakes and rivers, including a large part of Lake Victoria. Uganda largely consists of tropical zones but because of its wide range of physiographic and ecological conditions, has different vegetation types from wetlands through savannahs, forests and thickets to afro-alpine moors.

Population

The colonial boundaries created by Britain to delimit Uganda, grouped together a wide range of ethnic groups with different political systems and cultures. The population of Uganda stands at 30 million people, of which 50 per cent are below the age of 15. Life expectancy at birth is 54.5 years. Despite the high incidence of disease, including HIV/AIDS, Uganda's population is growing fast with a growth rate of about 3 per cent. 80 per cent of the population live in rural areas. Estimates on population density are also relatively high with a national average of 102 people/km².

With an HDI value of 0.456, Uganda falls into the lowest of the four Human Development Index classes.

The dictatorial regime of Idi Amin (1971-79) was responsible for the deaths of some 300,000 opponents; guerrilla war and human rights abuses under Milton Obote (1980-85) claimed at least another 100,000 lives. The rule of Yoweri Museveni since 1986 has brought relative stability and economic growth to Uganda (The Encyclopedia of Earth; NARO 2008; UNDP 2012)



Figure 3: A map showing the location of Kiboga district in Uganda⁹

Kiboga district

Kiboga district is located in the western part of the central region of Uganda about 120kms from Kampala. It lies at an altitude between 1,400-1,800m above sea level. Located not far from the Hoima highway that connects it with Kampala, Kiboga is close to a relatively good road network. The current population is estimated at 279,900 (2010), with a growth rate of 4.1 per cent. The population is composed mainly of the original inhabitants of the Baganda tribe.

The district of Kiboga evolved from Buganda province, which was part of the great Buganda kingdom during the early colonial times. Kiboga district is classified among the districts that make up the famous 'Luwero Triangle', where the current president Yoweri Museveni started the guerrilla war in 1981 that propelled him and his National Resistance Movement (NRM) into power in 1986. With relative peace returned to the region, Kiboga district is among the fastest growing new districts in the country.

Ganda describes the cultural region of the Buganda country, to which Kiboga belongs. **Muganda** is the singular term for an inhabitant of Buganda, and **Baganda** is

⁹ http://en.wikipedia.org/wiki/File:Kiboga_District_Uganda.png

the plural term. The language spoken is Luganda, but English is the official language as well as the language of schooling. Swahili is the second official language, and is most widely spoken by the military and outside of Buganda.

1) Agricultural-operational characteristics of farms in the study site

Bukoba and Kiboga district depend highly on agriculture, which constitutes between 75 and 80 per cent of the total labour force. Smallholder farms¹⁰ cultivate close to 95 per cent of the total cropped land and produce more than 90 per cent of the total agricultural output (Shinyekwa 2011: 8). The household is the basic unit of small-scale farming, though there is also cooperation between other households from the community and relatives. High productivity of the farming system in the past made Bukoba and Kiboga district to one of the most densely populated areas in East Africa. The natural conditions can be classified as good. The region experiences a pleasant climate, with an average temperature of 18-30°C throughout the year. Much of the two districts is hilly terrain with flat, fertile valleys and thick tropical vegetation including forests and wide-open savannah grasslands. The vegetation is also interspersed with thorny bushes and seasonal wetlands, which are favourable for pastoralists and agriculture. The districts have reasonably fertile soils but the overuse of land in some parts has led to soil exhaustion. There is also an increasing shortage of available arable land, and young families migrate to other districts. Farmers attributed these trends to high population growth.

The major crops produced are bananas, maize, cassava, sweet potatoes, millet, coco yams, groundnuts, and beans. In addition to the produced crops, fruit and vegetable plants are grown. Intercropping is practiced. Some of these crops are not indigenous but were introduced in the colonial or pre-colonial time, for example, cassava, maize and groundnuts (Batuuka; Nkanda 2006: 423). The main commercial product in both districts is coffee; some farmers also grow cotton and sugarcane.

¹⁰ The classification of small-scale / smallholder farmers varies from definition to definition and country to country. In this thesis, smallholder farmers, defined on the basis of land and livestock holdings, cultivate less than 3 hectares of land and own only a few heads of livestock.

2) Personal-socio-economic characteristics of farms in the study site

Especially for those readers who have not been in a country of East Africa, I hereby would like to raise awareness of the social and economic realities of Tanzania and Uganda. Mostly during my participant observation, I registered my conceptualizations of the study site. I see a necessity in sharing some of these experiences and impressions with the readers of this work, in order to enable them to conceptualize the following study.

Based on my field notes, I was originally trying to develop a coherent identity of my research subjects, their values and attitudes. However, in the changing contexts, the research subjects always created new self-images. No family, no peasant was like the other; I observed large differences in the everyday processes, in the values and interpersonal relationships. They appeared to me to be contradictory, inconsistent in their behaviour and diffuse in their attitudes. In fact, I want to emphasize that one cannot conclude the everyday life and social realities of the peasants studied from some weeks of experience, and that it is important to be aware of the inability to convey fully an authentic voice of the research subjects in this study site description. I will, therefore, follow Ploder's recommendation (2009) to relinquish the ideal to create a general valid interpretation of the research subjects, but rather choose an unfinished reading style, where the negotiation of the importance of culture takes place through an open end. In the following description, I will not stop in the search for tangible research results; I will refrain as far as possible from generalizations, and will instead provide an accumulation of (to a greater or lesser extent) meaningful experiences and impressions. I hope to encounter openness and willingness among my readers to actually engage in such a non-classical scientific text format.

Arrival

Before I was brought to my family in Kiboga, we visited the 'village elder', the 'mayor' of the valley. After I established myself as a student and explained that I had no motive but to learn, he guaranteed my safety in his valley. In the following days, I could move freely in the valley. I fully understood how important it was to respect the local leader and hierarchy. The village elder had a great influence in the valley; it seemed that all the people in the region knew about my arrival even before they had seen me. Without asking, I was immediately told that I was not the first white woman

in the villages. The village children found me amusing; when they saw me they called me Mzungu (the white woman) and laughed. But soon after my arrival, I was baptized in the name Nakuya. Although I had a real name now, the young people preferred to call me sister. I met people that were very open and it was easy to get into conversation with them. Women and teenage girls in particular, however, responded shyly, and before they knew me well enough, they did not seek to talk to me. Unfortunately, my Luganda (language spoken in Kiboga) consisted of only a few salutations and vital words. The children and young people who attended school were all quite good at English. However, with adult and elderly people in general, it was unfortunately very difficult to converse without having anyone who translated for me. In Bukoba district, the linguistic situation was even more difficult for me. There, English is only the third language, after Kihaya and Swahili. I was able to have conversations with young people who were in the school and more highly educated people. With hands and feet as well as with someone translating, I managed to come to an understanding, but put my poor language skills in Kihaya and Luganda definitely represented a problem and also led to some misunderstandings.

Morning in Kiboga

The morning in the Ddamulira family in Kiboga started at around 6 – 7 o'clock with tooth brushing (one after the other, because there was just one tooth brush for quite a lot of mouths), followed by a hot cup of tea with lots of sugar¹¹. Then most of the family members went digging in the fields for about 2 hours. An elderly person told me that the “children of today” are spoiled by their parents and often do not even learn how to work properly on the fields or run the household. However, this is not a critique I share. When I was digging with five-year-old Barbara, she was able to work more tirelessly than I could¹². For her young age, Barbara seemed to have a high degree of independence. If she did not work, she took care of the younger toddlers.

At about 9.30 am, we had breakfast that consisted of some leftovers from dinner; mostly steamed sweet potatoes and cassava. Different work in the house and on the fields was followed by breakfast. It looks like the distribution of work was not based on skills in the Ddamulira family, but it typically reflected roles ascribed by age,

¹¹ I had brought the sugar as a gift on my arrival. I wanted to bring something useful to the families, and I was told, in that case they would be happiest with sugar and toast.

¹² Since it was my first morning, it was a real struggle to get a hoe (at the beginning they refused to let me work). I wanted to prove to be fit for work, but in truth, I was on the verge of collapse.

gender and the position within the family. The household head, Mr Andrea, looked for a suitable green space on the hill behind the house where he could tie the cows on a long row and let them graze for the rest of the day. Together with the mothers, the young girls were working especially hard in this family; after having washed the breakfast dishes, cleaned the house and the yard, they had to fetch water.

Water

This morning, I accompanied Agnes, a shy but very smart girl to fetch the water. We walked for about 15 minutes. There was a queue at the well and it took us about one hour to get two canisters of water (each of them about 12kg). The family can consider itself lucky; in comparison to most other households of the valley, they live very close to a well with water that seems to be of an acceptable quality. Through the government water supply program, many boreholes have been drilled in most communities of Kiboga (Directorate of Water Development, Ministry of Water & Environment, 2010). Now about 59 per cent of the population in Kiboga has access to clean water. The other two families that I visited in Kiboga unfortunately did not belong to these 59 per cent. They had to get surface water; indeed, it was not as transparent as the water I got with Agnes from the well and had little black worms inside. Once, they offered me a drink from the water, where the worms were still alive¹³. That evening, I returned very thirsty to Ddamulira's family. They explained me that people usually boil the water, like they are used to do it, but there are some poor families that do not always boil the water before they drink it. Apart from the better quality of the water, the second major advantage that the Ddamulira family had was a bicycle on which Agnes could tie up the water-canisters. The girls from the Ssalongo family had to walk about 1.6 km carrying the canisters with their hands and on their heads. Many families in Kiboga and Bukoba do not possess any kind of vehicle, on which they could tie up the canisters or any other heavy goods that have to be transported. Animals are not used for transportation or to work in the fields in Kiboga or Bukoba district.

¹³ It could also be a big misunderstanding and the water in the cup they offered me was just meant for washing my hands.

School

On the way back from the well, I asked Agnes why she was not at school. She did not like that question and said that she was taking a Semester off at that time, but that the following semester, she would return to school. There is a compulsory school attendance in both Tanzania and Uganda. After the introduction of the Universal Primary Education Program in 1997, all tuition fees for primary education in Uganda were abolished. Since then, the district has increased the numbers of enrolment of children at primary schools, but from my experiences in both districts, many kids are kept at home.

The adult daughter of Mr Andrea is an elementary teacher in a private school and took me to class with her on one morning. There were two “classrooms”, one with some tables and chairs, no walls but situated under a wooden canopy. The other classroom was situated under a big tree with a big board and no tables or chairs. However, the kids, all well-dressed in their school uniforms did not seem to mind. I think that the "tree classroom" was a provisional solution; most schools I had seen in Kiboga and Bukoba had walls, chairs and tables.

Families that can afford it send their gifted (male) children to private boarding schools, such as was the case with the older brother of Agnes, Eduard, who attended a boarding school in the North of the Uganda and came home just twice a year to visit the family. Mr Ssalongo from Kiboga told me that the only subject they have in public schools is religious instruction which is taught all day long. After hearing this information, I understood why some parents prefer to let their children work on the farm, instead of sending them to a public school. Public schools must be just beneath contempt if farmers like Ms Ssalongo spend 90 per cent of their money on school fees just to enable his children, or at least some of them, to go to a good (that means private) school. “To send my children to school, I gladly accept all my hardships” he used to say, but also Mr Ssolongo’s children had to carry their hardship as they had to walk three hours per day to get to the private schools.

Infrastructure and ‘modern’ technologies

No, or hardly any household owned a motorized vehicle and the roads were constructed accordingly: there are no paved roads and many households are only accessible on foot. There is no public transport in Bukoba or Kiboga that operates at

regular times. The Boda-Boda drivers (Motorbike-Taxies) were used in exceptional cases and there were just very few vehicles on the road which the peasants could ask for a lift. An infrastructure that is quite well developed, however, is the mobile phone network. With the exception of the village where we lived in Bukoba for three weeks, there was a good reception everywhere. Nearly all families I met had mobile phones, although there is no electricity in the villages. In order to recharge their cell phones, the people in Kiboga and Bukoba had to bring the phones to larger villages, where power supplies from a generator or solar panels were located. Firewood and charcoal are the main source of fuel in rural areas. In the evening, they use torches and kerosene lamps. Apart from torches, mobile phones, and a few existing radios, there were virtually no "modern" technologies, and a lot of devices were still unheard-of.

Confrontation with Western culture

When I talked about my Italian origins, I told the older couple of the Ddamulira family that we eat pizza, pasta and ice cream and that for birthdays we get a cake. I thought to have cited just foodstuffs that they would already know, because they are probably one of the most globalized dishes. However, in the Ddamulira family none of them were well-known. When I explained how a pizza and a cake are made, they also did not know what an oven was.

I told Mr Andrea that we had to buy all of our groceries because neither my family nor I planted anything. The reason for this was that we had no land. Suddenly, Mr Andrea was showing signs of compassion and I explained that not having land was nothing uncommon in our society. The fact that in Western Europe less than 5 per cent of the population are still working in agriculture and that we are also content without possessing any land, seemed to be untrustworthy to him. From then on, Mr Andrea said again and again that my father should come to Uganda where he could buy a lot of land.

Surprised by my landless fate, they asked me how much I had to pay for rice, what the prices for vegetables were and so on. Although I am of the opinion that food in Europe is generally too cheap, it was of course not surprising that the prices I told them were incredibly high for them. I definitely should not have answered when asked about the price of my apartment, as I was almost regarded a liar. Also, the fact that I live in a house with 5 floors, which is so large that 40 other people also live in

it, was hardly believable to Mr Andrea. Luckily I had as a proof, a brochure about South Tyrol with pictures inside where they could see about how big houses can be. They treated the brochure as if it were a Bible. In fact, the peasants had no newspaper, no postal service in the two districts and it seemed that printed-paper was valuable. Looking at the pictures in the brochure they came up with questions that would never have come to my mind. They asked what the geraniums on the wooden balconies were. I answered flowers, to which they asked how could these beautiful flowers grow so far removed from the ground? Many concepts of the western culture were very foreign to them. They had a lot of questions. Often, they seemed impressed with how things are going in the North, but it did not seem as if they were envious. The Ddamulira family viewed many developments critically, especially when it came to social issues, family structures or religion. For instance, the fact that many children are not always seen as a blessing in the Global North, that many people have lost faith in God and that old people often live alone, was perceived as very alarming. My households in Kiboga were also much less tied to and interested in material things than I would have expected. When I went to see my families again during my second stay in Uganda, I arrived with clothes and little toys for the children. I expected that the children would be overfilled with joy, in particular the children of the poorest family, who had as only toy a ball made of constricted plastic bags, but I was sorely “disappointed”. At my arrival, the four year old girl whom I had befriended especially, ignored the gifts totally and instead clutched my right leg for five minutes, full of joy that I had returned.

Gender

Although Agnes is able to cycle, she did not sit on the bike but used only one pedal to stand on and used the other leg on the ground to gain momentum. Girls and women are not supposed to ride bicycles, she explained. For Agnes’s father, Mr Andrea it was very important that a certain ‘gender order’ was respected. His family had some sitting furniture in the house, but just the male family members were allowed to use them while eating, the girls and the wife had to sit on the floor¹⁴. It was also a custom

¹⁴ As we were eating supper I invited the daughters to sit with me on my mattress, my reasoning was that they would sit still lower than the men. But my reasoning did not correspond to the logic of Mr Andrea who ranted and raved about the daughters.

in Mr Andrea's household that the men had something to eat before the women¹⁵. Most families in two districts, however, told me that it was usual in their households that pregnant and lactating women and young children were at the first place in the 'food ranking'.

Mr Andrea was clearly a person of authority, also in the neighbourhood, which probably had to do with his age and his social status. Women who met him on the street knelt to the ground to greet him and did not look him in the eyes.

Even his own daughters and his two wives¹⁶ had to kneel to welcome him back home, when he had been away for some hours. I have not observed this behaviour in the other households. Although the customs in this family might suggest the presence of very patriarchal social structures, I did not get this impression with the other two families. During the meal, they all sat at the same height and there was also no difference between the sexes during the ranking of the output of the food. In the Ssalongo household, I would not have noticed that girls had to behave or have been treated much differently than boys. While the family relationship in Mr Andrea's household was very much influenced by authority¹⁷, the other two households I spent a day with were characterized by a very loving relationship between husband, wife and children.

Just with the days I found out what else women were not supposed to do: wearing trousers for example or to sit crossed legged on the floor (half-lotus position)¹⁸. When I went to visit the families again in March and brought them some clothes, the teacher and adult daughter of Ms Andrea (she is a very self-confident single mother) was disappointed when she saw that there were no trousers for her. She explained that she would really like to wear some of these because she did not care what other people would think of her.

Midday - cooking

If one social aspect can be generalized, it is that women, especially mothers have an enormous workload, be it in Kiboga, and in Bukoba. The cooking process (from

¹⁵ Even if there remained not enough food for all the girls, the men had to leave nothing to them.

¹⁶ The two wives live in two different houses that are in a distance from about 100m to each other.

¹⁷ The children had a very respectful and distanced relationship with him. To create peace and order in the family he threatened the children regularly with his raised hand.

¹⁸ It was the way I used to sit until that day and I had only trousers with me. So you can never prepare yourself enough for a stay in another culture. It seemed to be ok for them, but when we were going to a funeral they asked me to tie a floor-length cloth around the waist.

harvesting the food, to peeling, cutting, cooking and washing dishes) is without doubt the task that takes up the most time. Depending on how many warm meals are cooked, cooking takes between 4 to 9 hours per day¹⁹.

After returning from fetching water with Agnes I went with the mother and the girls to cut down a large banana plant with a fruit cluster that consisted of at least 80 to 100 fingers. Quite impressed, I asked, “For how many days of cooking is such a fruit cluster sufficient?” Only as they answered me that “It’s just for lunch, maybe there will be some left also for dinner”, did I realize how much food was actually required for daily consumption. They must cut down a banana plant almost daily to feed a 10-person family and this mainly supplies just one meal. Not to forget the losses due to pests and diseases. When I returned at a later stage with the mother in the home garden to fetch the sweet potatoes, we had to throw away nearly 1/4 of them, because apparently they were full of worms or diseased. Since I knew how large their fields were and about how much labour agricultural tasks required (if you have to do every process with your hands and very simple tools), it suddenly became very obvious that not much of the agricultural production could be left to the market for sale.

While I was desperately trying to peel the bananas with a knife, without cutting away half the fruit, the mother began to open the sun-dried groundnuts and grind the content. The bananas were wrapped in banana leaves and steamed in a pot for a long time. The whole cooking process took us hours and hours. At around 2 - 3pm it was lunchtime; we ate steamed matooke (cooking bananas) and a steamed pumpkin with a sauce that was made of ground groundnuts.

After lunch the family continued working until five or six o’clock. I went with the kids to collect fodder for the animals and tried to grind millet on a stone²⁰. In the late afternoon we were eating roasted maize, jackfruit, unripe mangoes and tangerines and I started playing different ball games with the kids. The only person that still continued working was the mother who was already cooking for the supper. In the evening, the boys showed me quite proudly the place where the village brews their banana spirit. Brewing was a collective performance, people from many different households helped – children, women, men. Drinking on the other hand, was primarily a thing for men. And they were quite good at it. But they never spoke of a

¹⁹ Depending on the households, 1 to 3 hot meals per day are prepared. In Bukoba, I was told that the number of warm dishes per day depends on the wealth of the family.

²⁰ In this work, I was replaced very quickly and sentenced to watch.

drinking problem, which many men definitely had. During supper, the eldest son of the Ddamulira family was drunk. We had steamed sweet potatoes and cassava for dinner, some roasted green leafy vegetables (Amaranth) and a sauce made of beans and tomatoes.

Family structures

In fact we had nearly eaten all the bananas for lunch, but this was also due to the fact that during the morning the size of the family became bigger and bigger. It seemed that the family attracted lot of children. These children were either from the neighbourhood, or children of relatives who could not take care of them. They spent entire days on the Ddamulira farm and ate together with the Ddamuliras up to three meals a day. One child even spent a few nights with the family. I asked the Mother whether she receives a compensation for the meals she is offering to these children who are not hers day after day. The mother could not understand what I meant, so I asked her in a more specific way: “What do the families of these children give you in return? Do they bring food or do they carry out work for you?” She looked at me, started to laugh as if I asked a very funny question and said “No I don’t receive anything, anyone who is on my farm during eating time is welcome to eat with us”. Given that my question seemed so absurd to that women, I understood how strong the social ties in the rural areas are²¹. After I heard several times children calling Mrs Ddamulira “Maama” when she was not their mother, it was explained to me, that every adult is called “Maama” or “Taata”. When parents die or are no longer able to take care of their children, it is a matter of course that relatives or neighbours raise these children²².

As is typical for subsistence farming societies, birth rates are high in Kiboga and Bukoba. The lowest number of children in the families I visited in Kiboga was 8. Officially, girls cannot be married until they are 18 years old, but I met mothers that did not seem to have reached this age. Young women with whom I had deeper conversations were surprised to hear that I was not married although I have had a

²¹ A few days later I got to know Maria. I could not estimate how old she was, something between 15 and 20, but actually no one knew because she was a full-way (what is a full-way?). She had problems with alcohol and it was said that she had already drunk too much as a child and is, therefore, “a little crazy”. She lived alone in a house, but spent the whole day in Ssalongo’s yard. She was treated as if she were her own daughter.

²² When I returned two months later to visit the family, they had taken up a two-year-old child, whose parents could no longer care for him.

boyfriend for several years and even lived with him in the same flat. And they were even more astonished and could not understand at all, how it was (biologically) possible that I have not become pregnant yet. Prevention is certainly not usually practised in Bukoba and Kiboga. Hormonal contraceptive was something they had never heard of before. In this regard, a large number of children are fortunately seen as a gift. The Ddamulira family was a special case anyways; Mr Andrea had with his two wives so many children with his two wives that he himself continued to answer me not to know how many²³. I could not explain to Mr Andrea why my father was satisfied with only two girls.

Animals

In a moment when we were alone, Mr Andrea asked me how it was possible that my family became so rich, when my father could neither have many children, nor any land as his owns. In fact, in Kiboga and Bukoba, wealth was strongly associated with the ownership of land; a man without land is a poor man and had to go to work off-farm. Furthermore, animals had a high wealth value, in particular cows, which were quite rarely encountered animals in both districts²⁴. Therefore, the Ddamulira family with 5 cows, 4 goats, 2 sheep, more than 15 chickens and ducks, more than 10 rabbits and 3 piglets (and some scabies mites, as I found out later) was quite an exception. High meat consumption is seen as a status symbol and, therefore, a delicate matter but since this family had a lot more animals than the average, I dared to ask how often they ate meat. "Once a month?" I asked. They did not eat meat so often²⁵. "We try to sell them, when they are big enough". In Bukoba I gained some more information about the meat consumption: the participants said they would slaughter bigger animals mostly during Easter and Christmas, and chicken flesh or duck was consumed every two months on average. However, meat consumption is highly dependent on the (wealth of the) family. In Bukoba, people had a relatively high consumption of sardines due to the numerous lakes in the region. In Kiboga, the households had no

²³ Mr Andrea is about 65 years old and has two wives and an endless number of children and grandchildren. When I asked him about the number of his children he told me „I don't know, count them for me and then tell me“. I took that as a joke, but as the days went by and more and more people introduced themselves as a child of Andrea, I was not so sure about it anymore.

²⁴ I was told, however, that there are many cattle on the other side of Kiboga district, behind the Hoima Highway and that in Bukoba until the 19th Century was a lot of cattle. They all perished due to rinderpest. Since then, the cattle population has not really recovered since the lack of cow dung, and fertility in agriculture had declined sharply.

²⁵ He might have just understood "red meat" and not counted the chicken, rabbits or ducks, as they are not seen as meat.

fish in their diet. Most of the chickens in both districts were indigenous broilers and did not lay many eggs. Therefore, the consumption of eggs was not high. As most of the people in Bukoba drank tea with milk in the morning, I wondered why the Ddamulira family in Kiboga did not consume milk, since they even had a calf and a mother cow. They explained to me that this is not a milk cow and that she could be milked only for a short period. At the moment the cow has just enough milk for her own calf. Actually, I should have understood that in view of the udder. It was not at all comparable to the huge inflated bags, I was used to see in-between the legs of western „industrialized cows“²⁶. Mr Andrea explained: “One day I will sell all my cows to buy one of these exotic milk cows”.

Evening - hygiene and houses

When I told the men who wanted to introduce me into the village that it was my intention to live like my host families these days, he began to laugh. Despite my very active resistance, I was forced to buy a mattress and a mosquito net before we entered in the valley. They explained to me I would embarrass the family if I slept like them on a banana leaf-matress. So I slept quite kingly on my mattress under the mosquito net that looked like a four-poster bed and I must admit that I truly appreciated my comfortable bedding because the nights were short. We went to bed around midnight and at six o'clock everyone was awake again. However, I could not go to bed without having washed myself. Knowing how time consuming it was to fetch water and mostly because the lack of privacy, I tried to dodge the washing by explaining that I already had a quick wash in the morning, but no chance, the mother made clear that hygiene was very important and no one could get around it²⁷! I got a bowl of water and soap pressed into my hands and had to go to the meadow to take my “shower”. The concept of having a room for washing seemed foreign for them, but every family had their own toilet. The toilet was usually a big hole in the ground surrounded by a

²⁶ A local breed cow can produce about one to four litres of milk a day compared to about 10-15 litres of milk that a cross-breed can produce a day. A 75 per cent cross breed cow can produce as much as 30-35 litres of milk a day. The situation is similar in meat production. The local cattle breeds and most of the other indigenous animals like the chicken and pigs have a slower growth rate. An indigenous cow takes at least three to four years before it conceives compared to a cross breed which takes between 16 to 18 months to conceive if well-fed and well managed (Muzaale 2011: 1) Also, when a farmer wants to sell his or her animals, the one with cross-breeds is likely to earn more money than the one with local breeds. Accordingly, also the purchase of these exotic breeds is associated with higher prices.

²⁷ Mr Ssalongo had even constructed a particularly hygienic kind of water faucet to wash the hands after being on the toilet, by pressing just with the foot on a pedal that made the water container tilt.

three-walled hut.

I shared the room overnight with the rabbits, one hen with its young chicken and the two little boys of the family. I was sleeping in a brick house with two rooms. The room where I slept was the only one with concrete floor, whereas the other ones were made of mud. It also served as living and dining room in the evening. I noticed that in poor households the walls were made of mud or un-burnt bricks, the roof was grass thatched and the floor of mud. Wealthier households have houses made of burnt bricks or stones and have an iron sheet or tiles as roof as well as concrete floor. The kitchen consisted in both districts of a small hut on the other side of the yard, with two big stones that made up a fireplace, which was heated with wood. The kitchen-hut served as a stable for pigs in the night. When I saw that the piglets were locked up in the kitchen, I did not know how to feel about this, as the cooking takes place exclusively on the ground²⁸. The next morning I kept an eye on the kitchen hut to take a look inside as soon as the pigs were let out. But the kitchen was clean and the pigs ran so fast they only went out into the garden and relieved themselves.

Health

The boys asked me why I slept under a mosquito net. I said because of malaria. He answered almost offended: “Malaria? We do not have malaria here!” To make sure that he was right, he shouted into the next room where the rest of the family slept to ask whether there was malaria here. The mother confirmed that he was right; there is no malaria in the region. This information was in opposition to what I had read before coming to Uganda: “In most parts of the country, temperature and rainfall allow stable, year-round malaria transmission at high levels with relatively little seasonal variability”. Malaria is Uganda’s leading cause of morbidity and mortality. According to the Ministry of Health, malaria accounts for 25 to 40 per cent of outpatient visits to health facilities and is responsible for nearly half of inpatient paediatric deaths (President’s Malaria Initiative April 2013). I could not judge whether the people just wanted to take advantage of the ignorance and stuffed wallet of a Muzungu (white person) by selling her a malaria net where there actually was no malaria or whether it was possible that the family did not know about the risk of malaria and that the

²⁸ I thought about the ready-to-use paddle testers we had to use in the university-kitchens, to make sure no bacteria, yeasts and moulds would be left after we had already cleaned with strong cleaning agents and I had to laugh.

disease was not identified as such when someone fell ill. This would be evidence of a very low information level and very bad health care system. Malaria is also the number one cause of death in Bukoba (www.kagera.org). Although, when we asked the peasants in Bukoba about the state of health of their children, they were talking sometimes about fever, yet I did not even hear a farmer speaking of malaria. It was the same case with HIV and AIDS. My colleague from Kenya, who had worked in an AIDS project, recognized the patients easily, of which there were unfortunately at least quite a few in Bukoba. In 1983, the first reported cases of HIV /AIDS in Tanzania occurred actually in the Kagera region (the region Bukoba district belongs to). The fact that the disease was imported from the neighbouring country is a result of the region having the largest common border with other countries. Also in Uganda, HIV is a widespread disease; the government is, however, known for undertaking massive campaigns against the spread.

The districts had different publicly and privately owned hospitals, dispensaries and health centres. Mothers have health cards for their babies, from which we could read that most parents have their children vaccinated and measured regularly. In Bukoba, I asked a woman of a one year old child that had a bad cough and seemed to be in very bad health whether she has ever been to the health station with her baby. I could read the answer from her embarrassed reaction. I met people in both regions having diseases that would be not too hard to avoid or cure (ex. Goiter). Some people explained to me that they could not afford to go to the health centre, others just preferred going to the traditional healers. Particularly painful were those experiences, when sick people came to me and showed or explained to me their diseases, because they hoped I could give them medical advice. I also experienced a similar situation in Bukoba, when a gentleman came up with a bottle of yellow dirty water, telling me that the water quality in his village was so bad that the family gets sick of it. It broke my heart to explain to them that I could not help them.

Closing remarks

Peasants in East Africa are frequently portrayed as poor, vulnerable, exploited, living at the edge of starvation and dependent on international generosity. I might have even contributed to this pitying picture in my description of the study area writing about the shortcomings of various infrastructures (especially the situation in the education

and health system are very worrying). It is also a fact that poverty remains firmly entrenched in the country's rural areas: today about 38 per cent of people living in rural areas of Tanzania and 40 per cent of the rural people in Uganda are classified as poor (IFAD 2013; Kweka; Kabela; Musa 2008: 233; Bakunda 2008: 249). However, despite all the threats to subsistence peasants: crop failure, drought, price fluctuation, increases in taxes, illness, capitalism and international trade, bad infrastructures etc., the population in Bukoba and Kiboga has not left me with the pitiful impression of a vulnerable, exploited social class. Mostly, I met peasants who were proud of their agriculture and who could hardly wait to tell me something about it. They possessed a great knowledge of their environment. They felt pride for independence in food production and the social strengths of their system. They were interested in the world outside their region, but they did not seem strongly attracted. One can count oneself lucky if he/she owns land and can remain in the district with his family. What peasants are actually able to accomplish, to build their own houses, clear their own land, grow their own food and pay for the education of their children, is often invisible to both development agencies and the government.

Theoretical foundations: Agrobiodiversity, food systems and food regimes through a Marxist lens

The concept of agrobiodiversity

Definition of agrobiodiversity

The term agrobiodiversity, also known as agricultural biodiversity²⁹, has evolved only in recent years in the wake of the general biodiversity discourse, which really emerged in the 1980s. Agrobiodiversity is the sub-set of general biodiversity³⁰ that is directly developed and managed by humans. Although sometimes used interchangeably, the terms “agrodiversity” and “agrobiodiversity” have distinct meanings. *Agrobiodiversity* has generally been shorthand for agricultural biological diversity defined as the management and direct use of species, including all crops and farm animals, semi-domesticates and wild species in agriculture. *Agrodiversity*, on the other hand, is a much broader term that includes all forms of life directly relevant to agriculture. It relates to “the variety and variability of animals, plants and micro-organisms which are necessary to sustain key functions of the agro-ecosystem, its structure and processes for, and in support of, food production and food security” (FAO). Because of this broad definition, agrodiversity also comprises soil organisms in cultivated areas, insects and fungi that promote good production, wild species from off- farm natural habitats as well as cultural and local knowledge of diversity and management forms as the basis of the exploitation of diversity (Wolff 2004: 1). However, I will limit my focus on agrobiodiversity because I consider agrodiversity beyond the scope of this thesis.

Agrobiodiversity in the scientific context

Although the term agrobiodiversity emerged at a later stage, a wide intersection of the topic was already analysed in the 1960s under the term “genetic resources” to discuss the genetic foundations of plant breeding (Wolff 2004: 1). In recent decades, the study of agrobiodiversity was undertaken in an ever-expanding context: In the 1970s the

²⁹ Both terms will be used in this thesis

³⁰ Biological diversity, or biodiversity is the number, variety and variability of all living organisms in terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are parts (UNCED, 1992).

understanding of agrobiodiversity and its conservation was characterized by the recognition of the importance of genetic diversity and emphasized the ex situ conservation³¹ of genetic resources. During the 1980s, the conservation of agrobiodiversity was not taken or presented anymore as an aim in itself, because the utility value of agrobiodiversity (for pharmaceutical and industrial purposes) became even more apparent. From then on, the utilisation perspective began to dominate the international debate on (agro-) biodiversity loss. It was not until the beginning of the 1990s that the focus shifted to an on farm approach. In this type of in-situ conservation plants and animals are kept in natural surroundings and used within farming systems (Wolff 2004: 1-8). Ultimately, agrobiodiversity thinking has come to be embedded in an “integrated, holistic agro-ecosystem approach” (Wolff 2004: 1) and is nowadays embraced as a topic not just by agriculturalists and breeders, but by any kind of ecologists and biologists, nutritionists, and social scientists. The loss of agricultural biodiversity is now linked to the erosions of indigenous and traditional food cultures and is associated compulsively with a high shrinkage of traditional knowledge and skills (He 2010: 14).

The role of agrobiodiversity

Agrobiodiversity offers private (captured by farmers and consumers) and public (ecological services like resilience, etc.) benefits to society (Wolff 2004: 1) small-scale farmers – who constitute around 85 per cent of worldwide farmers traditionally conserve and grow a variety of crops for cultural, economic, and environmental reasons.

The diversity of livestock and crops is the result of centuries of human breeding efforts based on locally differentiated resources. Some species do not need much water, others are resilient after floods, and others can cope with extreme heat or extreme cold and are more resistant to pests. In this way, the full range of different microenvironments, such as soil, water, temperature, altitude, slope or fertility within a single field or region is exploited and thus agrobiodiversity contributes to a sustainable intensification (Thrupp 1997; Worede 2012: 102).

The interaction between different crops, animals and microbes results in a beneficial synergism that allows agro-ecosystems to manage their own soil fertility, pest control

³¹ Ex situ conservation means the conservation of plant and animal species outside of natural habitats, i.e. in cold room genebanks, botanic gardens, zoos, agricultural research stations and field gene banks.

and productivity (Altieri 1995: 87; Wulff 2013: 24). In the long run, the total yield per hectare is often higher in polycultures than in monocultures, mostly due to ‘niche complementarity’ among particular combinations of species. Niche complementarity results from inter-specific differences in resource requirements as well as spatial and temporal resource and habitat use, or from positive interactions between species (Tilman et al. 2001: 843ff).

Peasants that operate low-input farming systems, use genetically heterogeneous crops to minimize risk of crop failures. They use plant and animal diversity (both within and between species variation) to mitigate risks arising from volatile markets, droughts, pests and diseases. (Bioversity International 2008: 7) For instance, if all farmers in a given area plant one single variety of maize and if a certain disease occurs in that area which this particular variety cannot resist, or even if the market prices for that given crop fall, then the negative socio-economic and/or agro-ecological consequences will be enormous. (Bioversity International 2008: 7) In contrast, when species are mixed, habitats are created for natural enemies of pests (as well as alternative hosts for the pests), the spread of disease-carrying spores is reduced and environmental conditions are altered so that they are less favourable to pests.

Agro-ecosystems based on more species and varieties offer diverse susceptibility barriers to the spread of pests and also demonstrate natural weed control capability due to competition or allelopathic³² effects (Negri 2007: 4). By inter-planting and crop-rotation farmers can take advantage of the ability of farming systems to reuse their own stored nutrients. For example nitrogen can be increased by incorporating legumes in the crop mixture or in crops rotation (Negri 2007: 5). In this way, farmers conserve and increase soil fertility and health and reduce dependency on external inputs.

Agrobiodiversity further reduces input reliance because it helps to maximize effective use of resources by maintaining material and waste cycles through effective recycling practices. Peasants generally need low levels of input technology because they rely heavily on local resources and use human and animal energy (Thrupp 1997).

Another key benefit of agrobiodiversity is that it leads to an improved human nutrition. The diversity of indigenous crops and wild plant and animal species available in most tropical countries, in addition to providing essential nutrients,

³² Allelopathy is a biological phenomenon by which an organism produces one or more biochemical known as allelochemicals that influence the growth, survival, and reproduction of other organisms.

presumably offers broad benefits to health. Diets consisting of indigenous roots and tubers, cereals, legumes, and fruits and vegetables provide lower energy content and higher fibre than the staple commodities and reduce the risk of disease³³ (Johns; Sthapit 2004: 146f).

In summary, it can be stated that the agricultural sector depends on agrobiodiversity for sustainable agricultural production and the proper functioning of the agro-ecosystem. Agrobiodiversity is a form of insurance against socially, economically and ecologically risky environments. This contribution of agricultural biodiversity towards food and livelihood security among African peasants is increasingly recognized (Bioversity International 2008: 5). Conserving the ecosystem structure and stability of species diversity, therefore, reduces or spreads risks to individuals and nations³⁴ (Wale 2011: 3).

Agrobiodiversity loss

The diagnosis of agrobiodiversity loss is widely recognized by the relevant actors. Nevertheless, few and far between, the plant breeding industry argues that “the visible diversity in farmers’ fields may have been reduced, but the diversity of valuable genes has been increased by introgression of new materials” (Assinsel 1996 by Wolff 2004: 3). Although the causes, magnitude and consequences are context-specific, there is now an increasing consensus that loss of crop genetic diversity is an on-going problem all over the world. Genetic erosion has been identified as “the single most serious strategic threat to the global food system” (Gore 1992). In the report on the “State of the World’s Plant Genetic Resources for Food and Agriculture (PGRFA).” published in 1996, the FAO has already described the loss in diversity of plant genetic resources for food and agriculture including the disappearance of species, plant varieties and gene complexes as “substantial” (“genetic erosion”).

³³ Epidemiological studies underline the benefits of a varied diet, particularly one including fruits and vegetables, in increasing longevity and reducing the rates of chronic degenerative diseases and in improving nutritional quality and child growth in developing countries (*Johns; Sthapit 2004: 147*) Although traditional diets offer many benefits, they are not inherently safe or all positive. In many places traditional food systems were and are characterized by relative monotonous diets. Safeguards against adverse biological and social risks of promoting the use of traditional resources must be therefore based on conscientious analysis and procedures for implementation (*Johns; Sthapit 2004: 151*)

³⁴ The conservation of agrobiodiversity should not be reduced to these utilitarian technocratic arguments. There are also ethical and moral reasons for which the maintenance of Agrobiodiversity can be seen as worthy, but in science these arguments are yet used less frequently to justify the maintenance of agrobiodiversity.

FAO (2004) summarizes the main facts about the worldwide agrobiodiversity loss as follows:

Since the 1900s, some 75 per cent of plant genetic diversity has been lost as farmers worldwide have left their multiple local varieties and landraces for genetically uniform, high-yielding varieties. 30 per cent of livestock breeds are at risk of extinction; six breeds are lost each month. Today, 75 per cent of the world's food is generated from only 12 plants and five animal species. Of the 4 per cent of the 250,000 to 300,000 known edible plant species, humans use only 150 to 200. Only three crops – rice, maize and wheat – contribute nearly 60 per cent of calories and proteins obtained by humans from plants (FAO 2004: 2).

The loss of agrobiodiversity can be devastating for African peasants because it results in the loss of not just food, but many products, like medicines, building materials, living fences and so on, which contribute to farmers' livelihood strategies and affect ecosystem functions (Bioversity International 2008: 9). Agrobiodiversity loss can therefore result in a substantial decrease in the resilience³⁵ of farmers' agroecosystems and consequently increase in farmers' vulnerability (Bioversity International 2008: 9).

Causes of agrobiodiversity loss in Uganda and Tanzania

The threats to agrobiodiversity are manifold and interrelated. Some are well known; others are more recent and less recognized. The two key drivers of change in agrobiodiversity in Tanzania and Uganda are the loss of agriculturally productive land due to land degradation and land conversion, and changing agricultural production practices and consumption patterns:

Land degradation and loss of land

The FAO (1996) defines the degradation and loss of land in Africa as a main cause of loss of genetic resources. Degradation of agro-ecosystems occurs due to unsustainable farming methods or natural hazards. Pests and diseases, for example, can lead to poor seed availability (Country Report Tanzania 2009: 18; Country Report Uganda 2008: 16). Furthermore, over-exploitation of land and other natural resources, as well as

³⁵ Resilience= „the capacity to absorb shocks while maintaining function” (Bioversity International 2008: 9)

pollution of the environment are strongly linked to agrobiodiversity loss as farmers in degraded lands tend to concentrate on production of exclusively stress adapted species. Land degradation (and desertification). further results in loss of genetic material because the loss of agricultural area goes hand in hand with the thereon existing species. Especially in Uganda, where land degradation was estimated to lead to annual losses of up to 12per cent of GDP, this represents a major threat (African Development Bank 2010: 22). Given the ever-increasing land scarcity, it has become necessary for peasants to optimally utilise the scarce resources at their disposal to get high returns. Especially cattle farmers are being advised by the governments to change from the old practice of keeping big herds of indigenous cattle breeds from which they get little milk or beef and adopt the practice of keeping a few exotic or cross-breeds from which they can realise higher production in terms of meat and milk (Owiny 2012). There is further land grabbing which leads to loss of diversified agro-ecosystems and should be mentioned because of its increasing dimensions.

Landgrabbing

Land grabbing refers to large-scale land acquisitions and occurs when land that was previously used by local communities is leased or sold to outside investors, including corporations, governments, and individuals. Most of the investors have their origins in the United Kingdom, the United States, India, the UAE, South Africa, Canada and China. Landgrabbing strongly increased with the world food price crisis in 2007-2008. Typically, the land is taken over for commodity crops to sell on the overseas market, including for agrofuel and food crops (FoE –Uganda 2012: 5)

Uganda and Tanzania have been a major target of this trend for land grabbing, largely because their governments are eager to attract foreign investment. Holding land deeds is rare in Tanzania; less than 10per cent of the population have formal certificates of ownership for the land they farm, making them particularly vulnerable to this kind of foreign investments. Although rural communities' customary land rights are protected under the Ugandan constitution, in practice, these rights are being violated (FoE –Uganda 2012: 6)

To date no one can say exactly how much land has been leased to the investors. Some 27 agricultural investment deals have been signed in Tanzania since 2008, covering 274,228 hectare. In all, the Oakland Institute (2013) estimates that foreign investors planning biofuel or food production are seeking some 4.5 million hectares in Tanzania. In Uganda, estimates suggest between 4 and 8 per cent of land is under foreign land deals (FoE –Uganda 2012: 9) Landgrabbing is leading to the displacement of communities that are losing vital access to natural resources, including land for farming, firewood, forest products and in some places, water supplies (FoE –Uganda 2012: 6) Jobs for local people have been few and short-lived in the newly established companies.

Figure 4: Landgrabbing box

Climate change

Another reason for the loss of traditional plant species is the change in weather, and particularly the increased incidence and severity of droughts in East Africa. Climate change, resulting mostly from global warming, has been among the major causes of

reduced agricultural production and agrobiodiversity loss in many parts of Africa, including East Africa. In Uganda and Tanzania, most crop and livestock farming is rain-fed and, therefore, susceptible to weather fluctuations. Over the last three decades, the frequency of droughts and floods in East Africa has increased, resulting in crop failures and loss of livestock (African Development Bank 2010: 30). For instance, swampy areas and riverbeds in Tanzania which served as habitats for vegetables such as watercress in the past, have become drier or have disappeared altogether (Keller; Mndiga 2005: 409).

Population growth and Green Revolution

The population of Tanzania and Uganda has nearly doubled over the last 25 years³⁶ and will continue to increase significantly. This demographic development puts tremendous pressure on agriculture and will lead to further intensification of production, further use of agro-chemicals and the introduction of mechanization and genetic technologies. Bioversity International (2008: 9) states that the promotion of one single approach to agricultural development – the industrial high-input based approach of the Green Revolution – is one of the most fundamental causes of the decline in agrobiodiversity. This goes hand in hand with the low priority of research on traditional breeds, and the herewith connected lack of awareness on indigenous species. Since the beginning of the 21st century, neglected and underutilized crops and traditional varieties have received more recognition in academic literature, but the approach of the Green Revolution is still touted as the only way to feed a growing world population. Hence, more research and resources are needed to enhance conservation, use and commercialization of indigenous species and varieties (Bioversity International 2008: 9).

Replacement of traditional species

The decline of crop diversity is largely a result of the replacement of traditional, local species and varieties with genetically uniform, highly productive modern species and varieties (Country Report Tanzania 2009: 18). It has been acknowledged that the introduction of new varieties into traditionally diverse agro-ecosystems causes the

³⁶ Tanzania: 26,3 million people in 1992 and 47,7 million in 2013.
Uganda: 18,3 million people in 1992 and 35,6 million in 2013 (FAO 2013)

number of landraces as well as the local knowledge associated with it to diminish (Keller; Mndiga 2005: 410). With the onset of global market economies and modernization of agriculture in Africa, attention has been given to crops that offer a potential for export. As a result, high-yielding exotic vegetables have become more valued than traditional vegetables, and the latter are threatened with extinction (Keller; Mndiga 2005: 400). While the positive qualities of traditional crops and animals, such as their resistance to diverse ecological stresses or in case of plants the high nutrient content, may have long-term benefits to farmers, the positive qualities of exotic species, such as high yield, fast growth and less perishability, have short-term benefits that were easily perceived in the form of an increased income (Keller; Mndiga 2005: 410). He adds that it is true that indigenous breeds of cattle are hardy and able to withstand conditions like different kinds of weather. The productivity of local breeds is extremely low compared to that of cross-breeds or exotic breeds like Jersey, Friesian, Guernsey and Ayrshire. “Also, when a farmer wants to sell his or her animals, the one with cross-breeds is likely to earn more money than the one with local breeds (Muzaale 2011: 1). As low living standards are prevalent in Tanzania with 19per cent of the population living below the food poverty line and 36per cent living below the basic needs poverty line, it is understandable that exotic vegetables are becoming popular. Farmers have become more market-oriented, favouring only a few species as cash crops that have been specifically developed for this purpose. Consequently, the diversity of vegetables cultivated has been and may continue to be reduced (Keller; Mndiga 2005: 410).

Infrastructure

It has been recognized that good transportation infrastructure and market proximity have a negative effect on landrace diversity. Likewise, a study in Swaziland has demonstrated that in a market-based and urbanizing economy, the loss of agrobiodiversity progresses extremely fast (Keller; Mndiga 2005: 410). In his study, Djurfeld (2005: 206) also emphasizes the influence of transport infrastructure on agrobiodiversity:

- use of fertilizer and pesticides, being higher in accessible areas
- market orientation also significantly higher in easy access areas
- the number of crops grown, being lower in easy access areas

The study demonstrated that if time and distance to reach an unpaved road were reduced, this would increase the use of industrial inputs and decrease the number of species being grown (Djurfeldt 2005: 206f).

Changing food habits

International trade and to a lesser extent also food aid have led to the marginalization of small-scale farmers and their production mode. Further factors in this regard are the impact of a well advanced globalization and hence influences from westernized markets, education and urbanisation leading to different preferences in consumption habits, for example, preference of exotic crops or introduced commercial species, as well as a shift from traditional food to carbohydrate-rich fast food. Changing food habits have far-reaching implications on market demand and on what farmers produce (Country Report Uganda 2008: 16). Changing food habits are closely linked to the loss of indigenous knowledge and the introduction of new species. The so-called 'nutrition transition' documented in industrialized countries is now especially affecting the urban populations in many developing countries and the growing African middle class, but also in rural Tanzania, farmers reported that eating habits had changed among the young generation (Keller; Mndiga 2005: 410). Consequently, traditional vegetables and especially wild ones were not used any more. Even if some farmers did not experience a loss of traditional vegetables, they would often state that a shift in consumption and eating habits had happened. For example, sardines, meat, exotic vegetables and processed foods were preferred over traditional vegetables and home-made meals using fresh ingredients (Keller; Mndiga 2005: 407).

Habitat loss

Farmers in Tanzania also identified habitat loss as a reason for genetic erosion. This mainly concerns wild species used for consumption. However, it is also problematic for crop-species, because landraces and wildlife interact in evolution, and the varieties involved in such co-evolution processes lose their resilience and become more vulnerable if that process is interrupted (Worede 2012: 102). Wild vegetables being less known, valued and available in Arumeru and also in the Singida district in Tanzania could be attributed to the extent of urbanization and population density, which diminished the area of uncultivated land as a habitat for wild vegetables

(Keller; Mndiga 2005: 411). Urban expansion causes further widespread loss of agricultural land. The loss of forests and woodlands in Africa progresses at a rate of 4,4 million hectares, or 0.62 per cent per year. With the growing population and the growing consumption of more meat and other animal products³⁷, ever more land is used for farming (Lacher et al., 1999 In: Keller; Mndiga 2005: 411).

Loss of indigenous knowledge

Associated with production and consumption changes, indigenous knowledge on how to cultivate, collect and prepare traditional vegetables and their variable taboos and applications, for example as medicines, is regarded of high importance. Information about the varieties is usually better known to the elderly than to the younger generations. Such information is passed on from generation to generation orally and it is, therefore, difficult to obtain sufficient authentic information about traditional varieties, unless one understands the culture associated with it (Country Report Tanzania 1996: 16). The loss of indigenous knowledge has been recognized as one of the major factors affecting biological diversity in Tanzania. The relationship between the loss of indigenous knowledge of food plants and the reduction in dietary diversity has also been observed in Kenya. Likewise, and together with the indigenous plants, the farmers' knowledge on how to breed, manage and select these resources will be lost (Slikkerveer 1995 In: Keller; Mndiga 2005: 410).

New marketing channels

In Uganda smallholder farming is challenged with new institutional forms of private sector governance, like buyer-driven food chains and supermarkets (African Development Bank 2010: 28f). Tanzania and Uganda experience since the mid-1990s a strong rise of supermarkets. Because of the specialized wholesalers and the strict quality and safety standards that characterize supermarkets, peasants encounter difficulties to sell their small quantities of variable produce. (Bioversity International 2008: 9). However, as the successful Africa Leafy Vegetable project demonstrated can supermarkets also be an opportunity for selling traditional vegetables and adding in this way value to agrobiodiversity. But in general, these changes in food marketing

³⁷ Intensive livestock production requires large quantities of harvested feed. The growing of cereals for feed in turn requires substantial areas of land. Grazing occupies 26 per cent of the earth's ice-free terrestrial surface, and feed crop production uses about one third of all arable land (Steinfeld 2006: 391)

have had impacts on agricultural production systems, changing agricultural and nutritional practices and have led finally to fewer farmers cultivating or raising local species and varieties.

Legal factors

The policy and law environment relating to the management, access and control of genetic resources, like patents or other forms of intellectual property rights (IPRs) on living organisms have implications for agrobiodiversity conservation (CBDC 2009: 18). Those legal factors have (intentionally, or as side effects) emphasized heavily on private property rights and supported the orientation towards high output and homogenization of plants and livestock, thus also affecting the choice of seeds and breeds in agricultural use (Wolff 2004: 3). Most of these international instruments provide incentives for the private sector to participate in all facets of agricultural enterprises. On the other hand, small-scale farmers have no legal protection mechanisms, do not receive any institutional support to enhance their work and still they have no rights over their own agrobiodiversity materials (CBDC 2009: 18).

Summary of the causes of agrobiodiversity loss

Socio-economic conditions seem to dominate over environmental determinants in East Africa regarding on-farm conservation of agrobiodiversity. The changes in agricultural and nutritional practices contribute more strongly to genetic erosion in comparison to climatic conditions (Keller; Mndiga 2005: 400-411). As showed above there are different factors influencing this agricultural and nutritional development, for instance the law environment that leads to the concentration in the control of agricultural inputs, the aggressive promotion and marketing of industrial agricultural practices, and changing food preferences, which are supported by new marketing channels like supermarkets. Most of these factors are a result of - or reinforced by globalization and its dominant industrial food system. The following chapter will therefore address the role of so-called food system.

Agrobiodiversity and the food systems

The changes in agricultural and nutritional practices mentioned above are caused by the global industrial food system which is characterized by high-input based agriculture, globalized food markets as well as strong legal and institutional structures. The agrobiodiversity status of a certain region or country can, therefore, be considered as the principal outcome of food systems, if these systems are broadly and generically defined. Many Sub-Saharan countries are affected by this shift from local traditional food systems with complex agro-ecosystems, usually comprising small-scale family-owned farms, to a global industrial food system with specialized and industrialized farms. This development has raised numerous trials and tribulations regarding agrobiodiversity, given that modern, large-scale agricultural production relies on an increasingly narrow and homogenous group of genetic resources (Altieri 2002: 1; Loftas: 1995 in Wulff 2013: 25). It is the lack of proliferation of this global food system that has been the incidental cause of maintenance of traditional ways of farming by most smallholders. On the following pages I will outline the framework regarding the interactions of food systems and agricultural biodiversity.

What is a food system?

The concept of food system frequently finds its use in the analysis of nutrition, food, health, community economic development and agriculture-related issues. I will use the representation of food systems to summarize key processes and determinants of agrobiodiversity-loss in East Africa, particularly by showing the impact of agricultural change.

The wide-ranging literature on “food systems” reveals multiple perspectives and worldviews. The most useful conceptualizations are those which describe a food system as a chain of activities from production (i.e. the field) to consumption (the table): “Food systems comprise all aspects of food production (the way the food is grown or raised; the way the food is harvested or slaughtered; and the way the food is processed, packaged, or otherwise prepared for consumer purchase), food distribution (where and how the food is sold to consumers and how the food is transported) and food consumption; as well as the inputs needed and outputs generated at each of these steps.” (Sustainabletable 2012; Ericksen 2007: 2). However, a food system goes beyond the steps from production to consumption: It also incorporates the way of

organizing the reproduction of both material and social conditions, the circulation of goods and service and how men and women relate to the means of production or land (Hydén 1980: 12). As agrobiodiversity is influenced by changing production and consumption methods, as well as by the economic organization of food in its widest sense, it is this broad definition that makes the concept of food systems particularly suitable as a term of analysis.

Types of food system and the dilemma of terminology

Scholars divide food systems into two major types, but they are yet to agree on a consistent terminology:

The modern / conventional / capitalist / global industrial food system, of which there is only one;

and traditional / alternative / pre-capitalist / local small-scale food systems, of which there are many³⁸.

The fact that there is no terminological consensus in the scientific literature, and that most of its definitions should be considered with a critical eye, testifies that the concept of food systems is not yet fully evolved.

Although I will not be able to abstain from using the following terms, I would like to point out that the designation “modern” and “traditional” has to be treated with caution, because it evokes the association of local ones being backward and it gives the impression that small-scale farming cultures and their food systems are unchanging, frozen in time, growing the same crops and eating the same food since time immemorial³⁹. At this point I would like to emphasize that agriculture in East Africa has continually undergone change: Many different plants were introduced over hundreds and thousands of years and farmers have continuously improved their species and techniques⁴⁰.

Additionally, the attribution of the term “conventional” to the food system which is

³⁸ Food system can often not be clearly assigned to one or the other, because many are in transition and are merging into one another.

³⁹ Therefore, I perceive the definition of Johns (2012: 4) as not appropriate for my Work. He defines traditional food systems as “maintained by (Indigenous) people who retain knowledge of the land and food resources rooted in historical continuity within their region of residence and include traditional foods accessed within traditional knowledge from their natural environment through farming or wild harvesting”

⁴⁰ The majority of the plants which are referred to as “traditional” in Uganda and Tanzania come from other continents. The banana originally came from the Southeast Asian region. The origin of the cassava as well as of the sweet potatoes is most likely South and Central America (lebensmittellexikon.de)

most prevalent in the Global North and “alternative” to the ones that are still practiced by most rural communities of the Global South reproduces a clearly north-centered point of view. The term “pre-capitalist” implicitly assumes that the development inevitably boils down to capitalism. However, as I have already mentioned, I will not be able to dispense with these terms to the full extent, but whenever it is suitable, I will prefer to use the terms “global industrial” and “local small-scale”. Although there is no universally accepted definition of the geographic component of what “local” and “global” means⁴¹, I consider this expression most appropriate. Furthermore, I also consider the terms “industrial” and “small scale” to be very accurate.

The “**global industrial food systems**” operate on the economies of scale to maximize efficiency and production, hence lowering overall consumer costs. The global industrial food system as located within the world capitalist economy is driven by the necessity to constantly lower production expenses by using vertical integration, economic specialization, and global trade (Food Glossary 2013). Industrial, large farms and long supermarket chains, therefore, characterize this food system (Ericksen 2007: 1). It can thus be described as requiring a significantly high input and is heavily based on fossil fuel⁴².

“**Local small-scale food systems**” are more difficult to define, because the definition always depends on the local, specific context. The common denominator is the fact that they are mainly found in “pre-capitalist” formations and are characterized by a “peasant mode of production”⁴³ (Hydén 1980: 12). Local small-scale food systems are based on few external inputs. Production is less market based and not as heavily monetized. Thus, also wage labour is not widespread. The local food systems rely on a network of small, usually sustainably run farms rather than on large industrial ones. Inputs and outputs of the traditional / local food system come from, and remain in the particular place. The food systems depend more heavily upon local resources and the products are mostly consumed locally. Distribution is carried out over much shorter distances than what is common in the conventional global industrial food system.

⁴¹ “local” is usually defined in the context of food systems as “made or produced within a hundred miles” or as “made or produced in one state.”

⁴² Fossil fuel is necessary for mechanized agriculture, the manufacture or collection of chemical fertilizers, the processing, packaging and transport of food products.

⁴³ whereby even the definition of Peasant way of production is very controversial; see Marc Harrison 1977

Ericksen (2007: 1) summarizes the most important characteristics of both Food Systems as follows:

Food system feature	“Traditional” food systems	“Modern” food systems
Principal employment in food sector	In food production	In food processing, packaging and retail
Supply chain	Short, local	Long with many food miles and nodes
Food production system	Diverse, varied productivity	Few crops predominate; intensive, high inputs
Typical farm	Family-based, small to moderate	Industrial, large
Typical food consumed	Basic staples	Processed food with a brand name; more animal products
Purchased food bought from	Small, local shop or market	Large supermarket chain
Nutritional concern	Under-nutrition	Chronic dietary diseases
Main source of national food shocks	Poor rains; production shocks	International price and trade problems
Main source of household food shock	Poor rains; production shocks	Income shocks leading to food poverty
Major environmental concerns	Soil degradation, land clearing	Nutrient loading, chemical runoff, water demand, greenhouse gas emissions
Influential scale	Local to national	National to global

Figure 5: Food system feature Ericksen (2007: 1)

Many food systems of the Global South are currently in transition and are characterized by a fundamental social and economic change, such as the marked intensification of food production, the tremendous growth of processing and the packaging of food products, corporate concentration in retailing and distribution, and the rising influence of large numbers of urban consumers. Therefore, it is not by chance that the spread of the global industrial food system has resulted in a loss of agricultural biodiversity.

Local small-scale food system and agrobiodiversity

Beginning in the 1980s, the idea that farmers of small-scale food systems were exemplary conservationists and creators of agrobiodiversity, gained widespread currency in academic circles (Smith; Wishnie 2000: 493). After a closer analysis, it becomes clear that neither local food systems nor small-scale farmers can be generalized to be sustainable by necessity. It is romantically idealized to present the small-scale farmer as the “the ecologically noble savage” who saves agrobiodiversity. Farmers probably don’t produce agrobiodiversity for their own sake, don’t take into account the effect of their actions on the level of agrobiodiversity regionally or nationally. Farmers only produce crop diversity to the extent that meets their private needs (Wale 2011: 4). There is even evidence, of non-conserving behaviour by small-scale farmers including anthropogenic faunal extinctions and habitat degradation, as well as patterns of subsistence behaviour that seem to conform to economic optimization rather than (agro-) biodiversity conservation (Smith; Wishnie 2000: 494). However, despite some historic examples of anthropogenic destruction of livelihoods by over- and misuse, African peasants in general understood their environment and the subtle interaction of crops and animals very well (Bass 2012: 108). As rural economies are not highly monetized, primarily self-supporting and most of the means of production come from the farm, it is reasonable that quite a few different animals and crops are grown and reared on the farms to satisfy the different needs of the families: Rural households depend on the agricultural diversity for food, fuel, medicines, building materials, and living fences. It can be seen as a consequence of this multiple utilisation that a high level of inter-specific diversity characterizes traditional food systems.

Peasant farmers are seen both as custodians and users of biodiversity at all levels:

At the gene level (intra-specific diversity), traditional and adapted seeds and breeds are preferred to modern high-productive varieties for their greater resistance to diseases and their resilience to climatic stress (FAO 2013). The process of reproducing the seed on the farm and passing it down from one generation to the next gives rise to different morphotypes⁴⁴ due to genetic phenomena such as segregation and recombination after crossing, and selection. In most cases, traditional food

⁴⁴ Any of a group of different types of individuals of the same species in a population

systems, therefore, also show a high degree of intra-specific diversity, allowing that more than one variety per species is found on a farm. These different varieties of each crop are characterized by different ripening times, intended uses, tastes and characteristics (Negri 2007: 2). In contrast to highly bred hybrid seeds (or animals), within-species diversity of traditional species continues to evolve because the natural selection pressures as well as selective pressures (whether deliberate or not) applied by the farmers are at work.

At the species level (inter-specific diversity), diverse combinations of plants and animals optimize nutrient and energy cycling for agricultural production. The frequent use of under-utilized species reduces erosion of agro-biodiversity, creating a healthier gene pool functioning as the basis for future adaptation (FAO 2013). A high plant and animal diversity is, therefore, not only important for the conservation of useful species and varieties for future generations, but it also provides key benefits for agro-ecosystem and the smallholder farming families, including mitigation of pests and diseases that attack crops and animals, heightened food security, and improved nutrition (Thrupp 2000: 283).

At the ecosystem level (biodiversity), because the maintenance of natural areas within and around smallholder fields and the absence of chemical inputs create suitable habitats for wildlife. The provision of structures offering food and shelter, and the lack of pesticide use, attract new or re-colonizing species to the organic area (both permanent and migratory), including wild flora and fauna (e.g. birds) and organisms beneficial to the organic system such as pollinators and pest predators (FAO 2013).

In summary, it can be stated that impressive skills have been developed over millennia and centuries to adapt to the specific environments and available means, and to improve farming methods to sustain human development. However, while these traditional food systems allowed the human species to survive, they were not sufficient to provide anybody with appropriate food at any given time. This problem facilitated the emergence of the intensive industrial agriculture system based on only a few highly productive species, high specialization, fossil energy and chemical use in the twentieth century (Lairon 2010: 32f).

Industrialized, globalized food system and agrobiodiversity

The first “modern” varieties were bred in maize and wheat (in the USA and Italy, respectively) in the early 1900s. Since then, breeding activities have increased and continued to draw on progress made in genetics (Negri 2007: 3). Negri (2007: 3) describes the process as follows: “Breeders used the best performing genotypes found in landraces to create crossings, then selected the superior recombinants from among their offspring and multiplied them to produce genetically uniform varieties (pure lines or hybrids).”

Nowadays the “modern” agriculture and its highly selective breeding methods contribute significantly to agrobiodiversity loss. Huge numbers of animal individuals are excluded from livestock breeding, because due to artificial insemination only a few top performers are used for reproduction. In this way the genetic distance within populations is correspondingly reduced. (Wolff 2004: 3). Genetically homogenous and high performing livestock and plant varieties are also promoted by methods like hybrid breeding and to a small extent already by cloning (Wolff 2004: 3). In case of hybrid breeding peasants cannot continue the breeding process on their farms, because the produced breeds and seed are infertile. Hybrid livestock and seeds must be bought year after year from agro-corporations. ‘Genetic Use Restriction Technologies’ (GURTs) have a similar effect in plant breeding (Wolff 2004: 3). Modern varieties can generally be defined as concentrates of good genes that maximize the expression of traits of agronomic interest. Consequently, modern varieties often show high levels of resistance to a particular pest or to a particular environmental constraint, but due to their genetic uniformity they are vulnerable to changes in biotic and abiotic stress⁴⁵ (Negri 2007: 3).

However, the genetic uniformity led to the development, standardization and spreading of new agronomic techniques such as fuel-powered mechanical tools, chemical fertilizers, irrigation, pesticides, etc., which were made available on a large scale and at a relatively low cost by industrial development. These agronomic techniques, in turn, minimized the divergences between diverse environments and favoured in this way the widespread diffusion of uniform varieties. (Negri 2007: 3).

The global trade of agricultural products, the spread of modern, commercial

⁴⁵ “In addition, modern crops are more vulnerable to stress due to the over-simplification of the systems and landscapes in which they are produced. In fact, the transformation of varieties used in agriculture has coincided with profound transformations in productive systems due to wide-scale industrialization.” (Negri 2007: 3)

agriculture and intensive, high-input production systems can be considered the prime driver of diversity decrease, putting native varieties and breeds at risk. The overall diffusion of modern varieties produced a sharp decrease in the number of cultivated landraces, which resulted in a great loss of diversity in the fields. Native species and varieties are substituted with high-yielding crops and farm animals; polycultures are slowly transformed into monocultures. Dumanski and Pieri (2000) suggest that “agrobiodiversity is the degree of diversification of production systems over the landscape and could as such be perceived as the anti-thesis of mono-cropping”. Since the economic orientation reinforces specialisation and economies of scale for the farmers to remain competitive, developed economies indeed practice monocropping and have lost virtually all of their agrobiodiversity (Bindraban 2004: 24).

The development of the industrial food system

Industrial capitalism emerged in the late 18th Century with its characteristic factory system. This industrial development in the Global North increased the demand for factory workers and led to a substantial population shift from the primary sector (agriculture) to the secondary sector (industry). In hopes of a better life and higher off-farm incomes, farmers abandoned their fields and moved to the cities. Suddenly a smaller number of farmers had to produce enough food for a growing urban population. This increasing demand for agricultural products by urban people led the agriculture to become more productive, market-oriented and specialized. Most farms stopped breeding animals and started producing only a few crops rather than all that was needed for sustaining the family. Because of this specialization farmers had to buy foodstuff which they could no longer produce on their own on the market as well as means of production like labour, machinery, fertilizers, and seeds. Breeds and varieties no longer required to be adapted to natural conditions like climate or soil, since machinery, irrigation, fertilizers and pharmaceuticals homogenize habitats (in a both costly and environmentally harmful way) (Wolff 2004: 3).

With the beginning of modern development aid that is rooted in the context of Post-World War II, but already since the times of colonization, this form of “modern” agriculture was brought to the countries of the Global South. Agricultural productivity is one of the key determinants of high agricultural growth, and in fact a key determinant of general growth in the long run. Rising agricultural productivity

released farmers for other activities, leading to structural transformations required for Africa's income to catch up with more advanced economies (African Development Bank 2010: 16). Farmers started to convert their (more or less) diversified agro-ecosystems to monocultures for cash crop production. A donor policy that promotes trade policies and the import of exotic breeds or crossbreeding has reinforced this process and threatens the survival of local species (Wolff 2004: 3). Both the markets for agricultural inputs and for agricultural outputs have been increasing in size over the last century.

Commercialization reduces food costs for consumers, can offer economic benefits to rural populations, and can even provide opportunities through which biodiversity can be retained and enhanced. However, prevailing market factors alter traditional cropping patterns in such a way that they result in erosion of the agricultural biodiversity represented by traditional crops and varieties.

In order to process them industrially, those agricultural goods need to be homogenous and supplied in large quantities. Therefore, commercialization usually takes the path of commercial monocropping and the introduction of high yielding crops. Thus, the adoption of the industrial corporate production mode and the introduction to a globalized food market demand considerable cuts in the agricultural biodiversity⁴⁶ (Wolff 2004: 3; Johns; Sthapit 2004: 145). As Samir Amin (2012: 332) shows, productivity has progressed much more unequally in the area of agriculture than in any other area⁴⁷ (Amin 2012: 332). This extreme difference in productivity confronted small farmers with an unequal competition with (local and international). modernized farmers and agribusiness corporations. Because of the globalization of the capitalist market factors and the differences in agricultural productivity between farmers of the

⁴⁶ Apart from the yields, the requirements of industrial cultivation, husbandry and processing (and to some extent consumer demand) determine the breeding objectives rather than improved adaptation to natural conditions (Wolff 2004: 3)

⁴⁷ Samir Amin (2012) provides a conceptual framework to assess global disparities in per-farmer productivity, identifying three broad classes of farmers in the world. The first are the massive-scale, highly mechanized grain-livestock producers in the temperate world who have a ratio of productivity of one to two million kilograms of cereals per farmer. The second is a more populous but still relatively small group of large-scale farmers who are well positioned within inequitable developing-world landscapes in countries like India, Thailand, Chile and South Africa, and have benefited from industrial methods and inputs. The productivity of these peasants ranges between 10,000 and 50,000 kg of cereals per year. The third group, which makes up the overwhelming majority of the global agricultural population, consists of small-scale farmers who lack access to most new technologies, but might be trapped by rising costs for some inputs like seeds, depend upon human labour, have little or no government support and often do not have sufficient or good quality land. These farmers produce around 1,000 kg of cereals per farmer per year (Amin 2012: 332)

Global North and peasants of the Global South, commercialization of diversified small-scale products has become very challenging. To understand how local small-scale food systems are incorporated in the market system and what consequences for agricultural production and consequently for agrobiodiversity arise, one has to understand the prevailing economic system: capitalism.

Capitalism and agrobiodiversity through a Marxist lens

Capitalism leads to the predominance of a market economy, which in turn produces a system of specialization and enlargement of the production units.

Assuming that the integration of Uganda and Tanzania into the world capitalist system is changing the local small-scale food system and can, therefore, be held jointly responsible for the agro-biodiversity loss, so-called exogenous development theories like the World System Theory offer the best approach to analysis. These development theories are based on Marxist paradigms which state that capitalism is predominant in the “peripheral” economies of the present world system and that this is fundamentally changing the ways of production. In contrast to the endogenous theories, the causes that are responsible for certain developments lay, therefore, outside of the region.

Marx’s theory of **historical materialism** (1859) has influenced these development theories to a great extent. Historical materialism is a methodological approach to the study of society, economics and history. It investigates potential causes of developments and changes in human society with regard to the means by which humans collectively produce the necessities of life. Engel provides us with a concise definition:

“The materialist conception of history starts from the proposition that the production of the means to support human life and, next to production, the exchange of things produced, is the basis of all social structure; that in every society that has appeared in history, the manner in which wealth is distributed and society divided into classes or orders is dependent upon what is produced, how it is produced, and how the products are exchanged. From this point of view, the final causes of all social changes and political revolutions are to be sought, not in men's brains, not in men's better insights into eternal truth and justice, but in changes in the modes of production and

exchange.” (Engels “Socialism: Utopian and Scientific” In Marx/Engels 1972: 419)

According to historical materialism society has gone through different modes of production⁴⁸, in which people earned their livelihood in different ways. One thing which is common in most production modes is the ruling class appropriating the surplus from the production: In ancient society slave owners profited from a class of slaves; during feudalism landowners from serfs; and in capitalism the capitalist class appropriates the surplus produced by the working class. The surplus value allows for profit and is thus the basis of capital accumulation. The amassment of wealth is possible to an extent in which the economic surplus is convertible into monetary value and expressed in money - hence the necessity to integrate subsistence peasants in the cash nexus.

Göran Hydén (1980: 17) states that in history new social classes have always risen to power and captured the peasant for their own ends to appropriate their surplus production. All countries in Africa are increasingly facing the subordination of the peasants to the demands of state policies, carried by the political leadership. In this way, the peasant mode of production is generally overpowered by more effective modes. This doesn't depend on whether it is a Marxist-Leninist or capitalist-oriented leader – there is the same need to get the peasant involved in the cash nexus. The increase in agricultural productivity, making peasants produce more than what is required for their maintenance to appropriate the surplus product from the peasant. Hydén (1980: 31) concludes that “Exploitation in this sense of the word, is inevitable in the African societies if they are to develop. Such has been the road to progress in all other societies”.

Modern capitalist agriculture that spreads in this way, is globally encompassing both rich, large-scale family farming and agribusiness corporations – both of which are characterized by high productivity and a low agricultural biodiversity and of which the latter is due to the general abandonment of mixed farming and traditional landraces (due to the low productivity) and the use of uniform, high-yielding cultivars (Grandi 2008: 33). Thus, it is the expansion of capitalism from the Northern countries

⁴⁸ The character of the production relations is determined by the character of the productive forces; these could be the simple tools and instruments of early human existence, or the more developed machinery and technology of present age.

that has led to the destruction of earlier viable economic systems of the Global South. According to this argument, the loss of agricultural biodiversity is a result of the incorporation into the metropolitan-dominated worldwide capitalist system.

Since Marx's time, the theory of historical materialism has been modified and expanded by thousands of Marxist thinkers. Marxist writers may differ in terms of how far they see capitalist relations of production as predominant in underdeveloped economies, but there is a general consensus that the main blockages to the development of these "peripheral" economies lie within the capitalist mode of production (Hydén 1980: 248). The argument about the destructive powers of capitalism is particularly strong in the writings of World System Theorists.

World System theory

The World Systems theory, a macro-scale approach to world history and social change, expanded on dependency arguments, stresses that the world system (and not national states) should be the primary (but not exclusive) unit of social analysis (Magnan 2012: 1). André Gunder Frank, Immanuel Wallerstein, Samir Amin and Beverly Silver originally developed the theory in the 1970s. It is based on the assumption that social change is not limited to the level of individual societies and thus requires examination of the relationships between societies and systems and the resulting changes.

World System theorists argue that while economic policies were often formulated at the local level, a focus on the local economy alone is likely to give rise to false perspectives. Broader imperial interests are very much a factor in this context (Youé 1978: 184). Concern for peasant farming had, therefore, little to do with the peasant's welfare; indigenous cash-crop production during colonial time, for example, was at the foundations of a capitalist pyramid, which consisted, in the case of cotton production, of a hierarchy of middlemen, local ginners, and international cotton manufacturers. In both instances, the African was relegated to the role of the primary producer or wage labourer (Youé 1978: 184).

Representatives of the World System theory claim that the development strategies implemented in Africa since its independence have basically extended the colonial pattern of integration into the world capitalist system (Amin 1990). The integration of the Global South into the world capitalist system "as an exploited and dominated

periphery, fulfilling specific functions in the process of accumulation at the centre of the system” is seen as the reason for the theory of unequal development (Amin 1990). The thesis of unequal development as formulated by Samir Amin helps to understand the mechanisms by which capital, dominant on the world scale, was subordinating pre-capitalist modes of production while distorting them at the same time. While the ethnological mainstream of the 1950s and 1960s was carrying on its research on the singularities of African societies, trying to isolate them conceptually, the thesis of unequal development highlighted the integration of apparently 'traditional' rural societies into the process of capital accumulation (Amin 1990). This is how in the first half of the 1960s, the essential characteristics of the modes of formal domination of capital over the African rural world were defined. The mechanisms of the 'trade economy' have shown how the technical and commercial systems of control were depriving peasant producers of their control over the means of production, which they still formally owned, in order to extract a surplus of labour transformed through commodity trade into profit for the capital of the dominating monopolies (Amin: 1990).

The relations between the dominant, metropolitan, capitalist societies on the one hand, and the peripheral, satellite states on the other, are an essential part of the structure and evolution of the capitalist system on a world scale. Countries of the Global South provide natural resources, cheap labour, and markets for countries of the Global North, without which the latter could not maintain the currently high standard of living (Frank 1969). Waters (2007: 42) describes this so-called period of “primitive accumulation” in capitalism, which is currently prevalent in most Sub-Saharan countries as the stage

“[...] when the older rights of peasants are usurped, and their traditional lands and property end up in the possession of people who are able to master the ways and means of the new market economy⁴⁹. Where the subsistence world had been one of similar homesteads, and a small elite, the *Improvers*

⁴⁹ Karl Polany (1944: 35) states that the enclosure movement in Europe was decisive for the conversion of a non-capitalist society, to one organized by marketplaces. The enclosure movement, which lasted in Europe from the 15th to the 20th century, refers to the period when putative land owners, typically nobles or clan chiefs, fenced off land which had previously been shared as “commons” by communities of peasant farmers through informal traditional norms: “Enclosures have appropriately been called the revolution of the rich against the poor. The lords and nobles were upsetting the social order, breaking down ancient laws and customs, sometimes by means of violence, often by pressure and intimidation (and only rarely through mechanism of market economy that came later).” (Polany 1944: 35)

believed that through practice of scientific agriculture and manufacture, more could be produced. Particularly in the scientific world in which many of them were embedded, they saw ways to specialize production so that a particular piece of land could be used to produce a commodity, which promised the greatest financial profits to the new “owner”. All that was needed was two things: First, they needed to build transportation networks into the interior where production took place. [...] The second thing needed was a new way of looking at the landscape. It needed to be looked at as being part of the marketplace, with a relationship to the commodities it could produce most efficiently. And this production needed to be compared to the market profits from rents that it produced if the land was to remain as land for subsistence peasants. To be efficiently used by the new economy, land and labour must be viewed as creatures of the market, exchangeable in the same medium at what Marx and Engels (1848) would call the *cash nexus*⁵⁰” (Waters 2007: 42).

Since the early 1970s, agricultural historians have strongly been affected by these theories that have been transmitted to African studies by Giovanni Arrighi, Walter Rodney and others. Since the World System theory attributes underdevelopment to the world capitalistic system, particularly to the impact of world trade through unequal exchange, the result has been a focus of interest on the African farmers’ response to external stimuli and constraints. Indeed, among the defining attributes of peasantry, historians now see contact with “an international capitalist economic system” as central (Tosh 1980: 83). Among others, the international capitalist economic system is blamed to be responsible for the changes in agricultural production and the extinction of peasants: The conversion of the agricultural production of the “satellite states” into sources of capital accumulation for the metropolis is changing traditional ways of production. By providing additional markets where the Global North can dispose their agricultural production, consumption patterns of the population change and hence undermine traditional farming systems further.

In fact, Samir Amin (2012: 331) warns: “Through the incorporation of the Global South in the world capitalistic system the third world peasant production is under a

⁵⁰ Karl Marx and Friedrich Engels used the term “cash nexus” to describe the depersonalized connection that exists between employers and employees in a capitalist society.

massive attack.” This argument is also supported by the political analyst Göran Hydén (1980: 9), who states that the road to modern society has been completed at the expense of peasantry: “The many small have been forced to give and give way to few large”. However, he does not reduce this “property” to capitalism alone: “Looking back into the history of our own societies, no difference between east and west, between socialism and capitalism, in the end, other social classes have always prevailed over the peasantry” (Hydén 1980: 255). Nevertheless, in the industrial world, the history of peasantry is already a closed chapter. In Europe and North America, the peasantry is virtually extinct as a social class, and small-scale agriculture with its high agricultural biodiversity is a marginal phenomenon. Although the agronomy in Asia and Latin America has been shaped by the existence of plantation economies over several centuries, peasants there still form a sizeable percentage of the total population. However, their freedom has been effectively curtailed by other social classes (Hydén 1980: 9). What is the situation in Africa? When and to what extent did the incorporation of Bukoba and Kiboga into the world capitalistic system start to undermine the local small-scale food system? Based on the world-system theory, an approach was developed to analyse food systems within capitalism: the Food Regime approach.

Food Regime approach

The most convincing theoretical approach to analyse changing food systems and their impact on agrobiodiversity is the food regime approach. Food regime theory is anchored in historical political economy and broadly is a Marxist approach to theorizing food systems. Food regimes analysis combines two strands of macro-sociological theory: the Regulation School⁵¹ and the World System Theory. In this approach agriculture and food are related to the development of capitalism on a global scale (Magnan 2012: 1). Harriet Friedmann and Philip McMichael introduced the concept of food regimes in an article (1989) in which they addressed the changing

⁵¹ **Regulationism** argues that relative stability in capitalist society is produced through regimes of accumulation, or modes of production and distribution, and modes of regulation: Following Marxism, the regulation theory sees a given compulsion for the accumulation of capital in capitalism. This can take different forms at different times, and accordingly we speak of different accumulation regimes. The accumulation regime describes the growth periods of the development of a capitalist economic system with the interplay of transformation, standards of production and consumption as well as the organization of the economy and society.

role of food and agriculture in the development of global capitalism since 1870.

Friedmann (2005) argues that international food regimes are constellations of relatively stable yet temporary interests and relationships of power and property that fall into distinct periods, with unstable periods shaped by political contests in between. Therefore, the Food Regimes approach emphasizes the structural continuities as well as breaks within different ordering patterns of global food production and consumption (Myers 2010: 1). McMichael (2009: 1) sees the food regime concept as a key to unlock structured moments and transitions in the history of capitalist food relations: “It is not about food per se, but about the relations within which food is produced, and through which capitalism is produced and reproduced”. As such, it shapes capital accumulation, geopolitical power, nation-state development, agrarian structural change, ecological transformation and national cuisines (McMichael 2009: 1; Myers 2010: 1).

The ‘food regime’ has always been a historical concept and has demarcated stable periodic arrangements in the production and circulation of food on a world scale, coupled with particular development projects and associated with various forms of capitalistic accumulation and hegemony in the world economy: British, American, and corporate/neoliberal (McMichael 2009: 1). The global and industrialized food system which was brought out by capitalism is historically divided into different Food Regimes. Scholars have further specified and/or broadened the concept of the food regime to reinterpret its historical, social, ecological and nutritional dimensions (McMichael 2009: 1) scholars have generally agreed on three global food regimes since 1870 and have identified partially different caesurae:

The “First Food regime” (ca.1870s-1940s) extends over colonialism, settler state formation, classical liberalism and British hegemony within the capitalist world system (Myers 2010: 1). It is the era of colonial imports to Europe – tropical commodities such as coffee, tea, sugar, rubber and cotton from Africa, as well as the basic grains and livestock imports from settler colonies like New Zealand (Friedmann, 2005: 234- 237).

The “Second Food regime” (ca.1950s-1980s) extends over decolonization, the cold war demarcation of the globe into first, second and third worlds, Keynesianism and U.S. hegemony. This U.S.-centred food regime distributed US production surpluses as ‘food aid’ to “friendly Third World governments” to secure geo-political loyalty

against communism. The imported food and its pseudo-imperial markets extended market relations into the countryside and, therefore, undercut local farmers and reconstructed urban diets along Western lines.

The “Third Food regime” (ca.1990s-today) is institutionalized through the WTO and covers the Cold War, the collapse of state communism and neoliberalism, the decline of U.S. hegemony and the ascendancy of transnational corporations (Myers 2010: 1). McMichael (2009) focuses on the displacement of the earlier ideological ‘development project’ of the Bretton Woods Conference by the neo-capital ‘globalisation project’ of the World Trade Organisation. Because of increased international competition and the high indebtedness that many southern nations faced, governments began embracing the ideology of neoliberalism. The rhetoric of deregulation, fiscal responsibility, and liberating the market from government intervention dominated policy decisions from then on (Rud 2013: 59).

McMichael (2004) argues that there are three principal vectors that shape the content and direction of the global food system:

- (1) the corporate model of industrial and transgenic agriculture - also identified as the actual industrial global food system
- (2) a variety of alternative models concerned with the sustainability of rural cultures, ecology and social equity - local, small-scale food systems
- (3) the political-institutional context, expressing the balance of (corporate and) geo-political forces in the world economy (McMichael 2004: 1).

Michael argues that there is a conflict “between (1) centralized, corporate-driven, export-oriented, industrial agriculture versus (2) decentralized, peasant-and family farm-based sustainable production primarily oriented towards domestic markets” (McMichael 2004: 1). Put simply, the global food system involves a central contradiction between the global industrial - and the local small-scale model. These are not simply alternatives, but the global industrial food system seeks to appropriate the basis of the production and survival of the local small-scale food system, whether it be land rights, seed saving, agrobiodiversity, or the production of staple foods for the masses (McMichael 2004). According to this argument, the steady loss of agricultural biodiversity is a side effect of this conflict. Hence, the degree of agrobiodiversity-loss reflects the power relations of the two vectors (1) and (2) in a

given area/political-institutional context (3).

The concept of the 'food regime' will help in the following historical chapters to illuminate the conditions of these power relations in Uganda and Tanzania. The historical analysis is - after an initial short chapter about East Africa's integration in the global food system in pre-colonial times - divided into three time periods respectively to the number of the existing food regimes. Each of the three chapters will start with an introduction of the respective food regime and subsequently show where Uganda and Tanzania sits in the current time period and to what extent they are influenced by the global food system.

Historical analysis of modernization and commercialization efforts

Incorporation into the global food system in pre-colonial times

When did the integration of East Africa into the world capitalistic system start to undermine local small-scale food system?

West Africa is well known for the antiquity of its markets. Many West African states have been open to trade from the north and south for many centuries, long before the colonial era at the end of the nineteenth century. The development of markets was accompanied by the production of agricultural products for exchange (Richards: 1973: 7). Polly Hill's accounts of the initiative displayed by Ghanaian cocoa farmers, cattle herders, or fishermen, and the instances of economic enterprise documented by Hill very often date to pre-colonial days (Richards: 1973: 8).

A comparable impression is unlikely to be conveyed by a reading of the standard literature on East Africa. It would appear as if there were no specialized agricultural structures and that Tanganyika and Uganda had no long-distance trade with agricultural products prior to the introduction of cash crops during the colonial times. This can probably be attributed to the fact that historians of pre-colonial trade have mainly concentrated on the (scarce) mineral resources of East Africa, like salt and iron, which generated regional trade. The contribution of East Africa to world trade had been more or less confined to products which derived from gathering and hunting, like palm oil, wild rubber, ivory, animal hives and - the cruellest form of "hunting" - slaves (Tosh 1980: 92). The staples of everyday consumption are usually dismissed as beyond the range of market demands (Gray 1970: 4). However, there must have been a food market, because there were a considerable number of specialist craftsmen, full-time elephant hunters, and trading caravans, sometimes consisting of several thousands of personnel who had to be supplied with food (Tosh 1980: 90). Commercial farming might not have been as developed in Tanganyika and Uganda, but centuries before the colonial period, Tanganyika possessed a large trade network that linked East Africa's interior with trade partners throughout the Indian Ocean. Like Tanganyika, Uganda had an active trade that linked the country with Africa's

east coast long before the arrival of Europeans⁵² (Gray 1970: 4). Samir Amin (1972) defines the very beginning of mercantilism in the 18th century as the moment when East Africa was integrated into the world capitalist system. This was “[...] a period when, Africa was 'specialized', due to the slave trade⁵³, in the supply of labour power which, exploited in America, was to speed up the process of capital accumulation in Atlantic Europe.” (Amin 1990) Amin (1972: 198) describes the role of Africa as follows: “Reduced to the role of supplier of slave labour for the plantations of America, Africa lost its autonomy. It began to be shaped according to foreign requirements, those of mercantilism.” The ‘specialization’ in slave trade was impoverishing Africa and leading to a regression of local agricultural production systems. (Amin 1972: 200). However, one cannot speak of food regimes at that time, since East African agricultural products did not play a role in the capitalist system. Furthermore, it is impossible to find evidence to what extent the slave trade influenced agricultural production and whether it had any bearing on agrobiodiversity. The colonial period, however, certainly had a stronger influence on the local small-scale food system, as historians record “the phenomenal expansion of tropical Africa’s cash-crop production” (Tosh 1980: 79) at that time.

1. The First Food Regime – The colonial period and its cash-crop revolution (1890s-1950s)

With the end of the slave trade, the new function of the periphery was to supply the Centre with raw materials and agricultural products (Amin 1972: 118). The colonial-diasporic food regime was characterized by the European powers that sought to conquer territories inhabited by indigenous people. McMichael (2004: 1) writes: “The British-centered food regime of the 19th century involved a global exchange of tropical crops from the colonies for manufactured goods from the European states, and a transitional relocation of (European) temperate agriculture to the settler colonies, where farm sectors partnered domestic industrial sectors as the foundation of the modern nation-state.” Samir Amin (1972: 118) regards colonization as the

⁵² When Zanzibar became part of the Sultanate of Oman, they established in the 18th and 19th century an expanding plantation economy centering on cloves in the 18th and 19th century.

⁵³ Since the British navy was intercepting slave ships in West Africa, Brazilian traders made the journey round the Cape of Good Hope, taking slaves from East Africa.

crucial stage of integration of East Africa into the capitalist system, in which the peripheral served the interests of the centre, by offering cheap labour and natural resources. Amin (1972: 118) writes that the colonial system „[...] organized the society so that it produced on the best possible terms, from the viewpoint of the mother country, exports which provided only a very low and stagnating return to labour.” (Amin 1972: 118).

a) East Africa

The Anglo-German agreement of 1890 outlined the imperial spheres of influence in East Africa. It settled that (what is now) Uganda and Kenya were to be considered British spheres and Tanganyika a German sphere. However, after being a colony and part of German East Africa, the post-World War I accords and the League of Nations charter designated Tanganyika as a British Mandate and later a UN trust territory until independence in 1961.

In 1894, the kingdom of Buganda became a British protectorate, which was extended in 1896 to most of present-day Uganda. Uganda remained a protectorate of the British Empire from 1894 to the independence in 1962 (Encyclopedia of the Nations).

In contrast to Kenya which was a British colony, Uganda and Tanganyika retained a degree of self-government that would otherwise have been limited under a full colonial administration. This is why native chieftains could retain a voice in their territories. However, colonial rules affected local economic systems dramatically, in part because the first concern of the British was of a financial nature. The primary economic task of the colonial powers was to integrate the African countries into the worldwide capitalist market, because they were considered as important sources of agricultural raw materials. This task basically consisted of convincing or compelling the rural population to produce those commodities required by European industry and European markets (Mapolu 1990: www). Cotton, coffee, tobacco, sugarcane, rubber and tea were introduced in East Africa as cash crops and were promoted by colonial government as the major source of income and possibly seen as the only means to end poverty⁵⁴. (Batuuka; Nkanda 2006: 424)

⁵⁴ This integration to the world capitalist system usually involved coercion and led therefore also to rebellions: “In German East Africa, for instance, attempts to compel the people to grow cotton led to the celebrated Maji Maji Wars of 1905-7, and in most colonies this resistance to exploitation continued despite brutal methods to stamp it out.”(Mapolu 1990: www)

The British state was seen as the ultimate vehicle, which would allow orderly economic growth, democracy and welfare. Colonial officials believed that a prosperous economic development could only be achieved by improving the economic conditions in the colonies through targeted investment. The catalogue of the planned measures included, among others, the expansion of cash crop cultivation and agricultural reform programs. It was clear that development needed the authority and expertise of the British State, and thus many experts were sent to Tanzania and Uganda to teach the farmers new ways of cultivation (Eckert 2005: 15f). But as the quotation from the Munich Ifo Institute for Economic Research at the end of the colonial period shows, the British only had limited success in convincing peasants all over East Africa of their endeavour:

“The main problem of agricultural development in a country such as Tanganyika is the uninterested attitude of the peasants towards economic efforts and rewards. They have a rather high appreciation of leisure. They like to have money and consumer goods, but they shy away from the effort necessary to obtain them. Moreover they think in static terms, i.e. they accept the existing order of things as a natural one” (Ruthenberg 1964: 49f).

This citation is the evidence that the peasants in Tanganyika did not want to give up their original agricultural modes of production and had no great interest in producing cash crops. It also conveys key perspectives and prejudices of the British, since we find the utilization of the stereotype of the "lazy nigger" that prefers leisure and works just to satisfy everyday basic needs for food. However, to the colonial "laziness axiom" was added some years later in a new "peasant production theory" that said that with the right price approaches even African farmers could be induced to increase their cash-crop production⁵⁵ (Eckert 2005: 19).

However, if the African peasants did not autonomously take the initiative to cultivate cash crops in the way the British authorities had told them, there was only one way to bring “Africans” to the right path of development: “Improvement through compulsion” (Eckert 2005: 18f). In many regions of Sub-Saharan Africa increasing

⁵⁵ Mapolu (1990: www) explains “Price incentives play a key role in the movement between cash crop and subsistence production. Thus, colonial rulers had the problem of maintaining low prices for raw materials while simultaneously ensuring their maximum production; this problem remains unsolved by independent governments.”

agricultural production wouldn't have been possible without forced labour. Laws were enacted, compelling villagers to cultivate particular crops, and not others and (mostly) men were forced to hire themselves out in plantations⁵⁶ (Mapolu 1990: www) since this work was not sufficient to secure the livelihood of the whole family, the rest of the family had to continue to work on the family-farm. In many colonies, this led to the development of a specific form of migrant labour: the adult male members of an African household were working temporarily outside the village community, while the women remained at the family-farm and worked in agriculture. In this way, the local small-scale food systems could be maintained (Mair 2005: 1). Particularly in eastern and southern Africa, European settlers used their political influence to create legal systems that guaranteed them access to cheap labour for their plantation agriculture (Curtis 2003: 314). However, this kind of compulsion was not widespread in Uganda and Northern Tanzania. In some regions of Tanganyika and Uganda and in the name of progress and development, the British Empire arranged massive government intervention in the agricultural sector. Coercive measures were not rare but forced labour was not common. During the second half of the 1950s, the colonial government stopped all governmental large-scale agricultural programs in Uganda and Tanganyika because the balance was – as we will see from the example of Bukoba – desolate. Eckert (2005: 21) interpreted most of the governmental projects in East Africa as a failure⁵⁷. This is not least because the policy of "improvement through compulsion" often provoked a massive resistance of the indigenous population and usually led to upheaval rather than significant improvements in production and living conditions (Eckert 2005: 17).

Considering these aspects, the question arises, whether the modernization of agriculture and the entire cash crop production did eventually fail.

There were some local large-scale cash crop producers that have been very successful in Uganda and Tanganyika. This group of African 'rural capitalists', mostly chiefs with privileged access to land and labour, possessed large plantations, modern machinery and wage labour. Initially, these African rural capitalists encountered great

⁵⁶ Only those farmers who had already produced and traded agricultural commodities before the colonial conquest or lived in areas around the European settlement centers, where they supplied these settlements with food, were spared this fate.

⁵⁷ It must be said, however, that these projects showed mixed success: In Sukumaland in the Lake Region in north-western Tanzania, where one of the first extensive "development programs" in sub-Saharan Africa after the Second World War took place, the cotton production could be increased six-fold within a decade.

British scepticism, but soon the colonial government realized their potential as role models for others and tried to concentrate resources and funding on these relatively few ‘progressive’ farmers in the 1950s. In this way, the farmers did indeed accumulate considerable wealth, but in most of the regions they did not initiate an agricultural ‘modernization’ within the terms as constituted by the British authorities (Eckert 2005: 21f).

The fact that it is, nonetheless, appropriate to speak of a cash-crop revolution - “be it in terms of its contribution to world trade and of its role in expanding the market in African societies” (Tosh 1980: 78ff) is largely due to the success of the small-scale farmers. Historians attribute the success of African agricultural production during the colonial time to the drive and resourcefulness of the peasant, who usually had a shrewder grasp of market opportunities than the agricultural officer or the company representative (Tosh 1980: 80). As we will see from the example of the peasants in Kiboga where the British pursued laissez-faire policies, a fertile cash crop industry has emerged within a few decades. The fact that small-scale farmers carried this market-orientated production of cash crop to a great extent was also the reason why it did not cause compulsive loss of agrobiodiversity.

b) Tanzania- Bukoba

Harsh regimes of labour coercion were unknown in Bukoba and Kiboga. The two districts were an excellent example of “peasant-étatist” regimes in colonial Africa, distinguished from “regimes of competitive exploitation” market by land alienation and strict labour control (Curtis 2003: 323). Nevertheless, although the small-scale farmers were very successful in the cultivation of cash crops, the belief that Africa's production can be dealt best with British solutions was widespread - also in Bukoba. During the colonial period, and especially following the takeover by the English, the rural population of Bukoba focused almost exclusively on coffee production. It was not the Europeans who introduced this crop to the district. In the 16th century, the Haya tribe⁵⁸ had already brought coffee from Abyssinia to Bukoba (MacDonald 1966: 126). The “Haya coffee” was a unique variety of Robusta. It was grown solely in certain localities only propagated by cuttings and a royal authorization was required to grow it. Coffee equated to wealth in the traditional Hayan society and it was not

⁵⁸ Nowadays, most residents in Bukoba still belong to this tribe.

used as much for consumption, as it was used for transaction including greetings, royal tribute, and rituals (Weiss 2003: 18; 61).

One might think that the existing structures could lead to a smooth transition to a commercial coffee-plantain complex after the arrival of the Europeans. However, when the Germans came, the long traditions led to clashes between traditional modes of thought and production, and European efforts to modernize their cultivation⁵⁹ (Weiss 2003: 63). The commercialization of the economy was altering Haya society in fundamental ways (Curtis 2003: 317). While German, British and African participants in the colonial system legitimized their strategies by reference to continuities with the past, references to “custom” and “tradition” were actually the language in which the peasants expressed their concerns about rapid and systematic change (Curtis 2003: 317). The Haya society was fraught with tension, because the changes were not as smooth as the Europeans tried to depict them:

The Germans imported Arabica varieties, which the Haya disliked, and introduced coffee propagation by seed, which undermined royal control over cultivation. However, the biggest mistake committed by the German administration was to dissuade the rural population from their mixed cropping and enforce pure coffee cultivation throughout the Bukoba region, in order to compel the Haya to enter the European cash economy more quickly (Weiss 2003: 51). Traditionally, coffee trees were raised in “bibanja” that already supported a two-tiered agricultural system with plantains above and annual crops below (Curtis 2003: 320). The cultivation of coffee on monocrop plantations would have had disastrous effects on the food security and agrobiodiversity of Bukoba. However, the Hayas were reluctant to replace their traditional food crops with coffee and insisted on their own production system. In spite of many disagreements and the insistence of the Haya on growing coffee in their ‘own way’, Bukoba’s coffee exports increased from 234 to 681 tons between 1905 and 1912 (Weiss 2003: 53-71).

After World War I, when the British carved Tanganyika out of German East Africa they still found a fairly diversified local economy in which the export sector had already played a significant role. Coffee was an established commercial crop, whose exports had increased significantly in the years of German rule, but it did not

⁵⁹ In contrast, modern cultivation was accepted more easily where coffee was unfamiliar, such as by the Chagga tribe in Moshi (MacDonald 126).

overshadow other exports. This economic status quo was considered by as inadequate the British rulers and, therefore, had to be changed. They decided to concentrate all the efforts on coffee (Curtis 2003: 318). Politically, the British acted to preserve 'tradition' by keeping and incorporating the local kings and chiefs into the colonial administrative structures, but economically the pressure on farmers to change their farming system became greater than during German rule (Curtis 2003: 316). The political sphere was characterized by conflicts between the English 'modernizers' who regarded massive government interventions in agriculture as indispensable for the 'development' and "progress" of the territory, and most district managers considered these interventions a threat to 'tribal structures' and hence to their own authority. They all agreed, however, that they alone were qualified to decide what is good and what is bad for the African population, and that an expansion of cash crop production was needed - an undertaking that would be most profitable in monocrops (Eckert 2005: 17f). From an administrative point of view, the problem with interplanting was that it made it difficult for officials to supervise cultivation practices. The rural population should, therefore, abandon their traditional "bibanja" farming systems (Weiss 2003: 150; Curtis 2003: 320).

As part of the 'Bukoba Coffee Campaign', nurseries for coffee seedlings were established in the 1920s. The seedlings of the coffee trees were then distributed to the farmers and it was made sure that they were properly planted (Curtis 2003: 318). Although Curtis (2003: 318) states that official coercion was very common for this massive coffee cultivation, the British were not able to enforce a monocropping system. Eventually, the 'Bukoba Coffee Campaign' resulted in the planting of over ten million seedlings between 1919 and 1925 in-between plantains and annual-crops on the traditional 'bibanja' (Weiss 2003: 150). The emphasis on peasant control over coffee trees in existing 'bibanja' created a public acceptance of the massive cash-crop cultivation that no other British policy could have attained (Curtis 2003: 320). Thus, after an initial phase of coercion, Haya agriculturalists could at least agree on the basic shape of the rural political economy and embraced coffee with more enthusiasm (Curtis 2003: 314). With the British rule, South Asian traders became more numerous and carried the world market further into the countryside. Links were established between Bukoba town, import export establishments in Mombasa (Kenya), and the international coffee market (ibid. 2003: 316). In the 1920s, Bukoba experienced an

incredible boom. In 1924, coffee had become absolutely dominant in the Haya economy. Their coffee became the most valuable peasant export of the territory, and Bukoba's Central Native Treasury the richest financial institution of any Native Authority (ibid. 2003: 318f). By the late 1920s, the enthusiasm of the farmers for coffee was so great that no one would have guessed that any massive coercion had been necessary. In his book, Curtis (2003: 319) quotes a peasant from Bukoba, Joseph Mwikila, who looked back on his boyhood days with a sort of astonished nostalgia: "Ten years after the English arrived, our country became amazingly rich. The money rained down on us. There was so much money we started to go crazy. The Englishman was as sweet as honey. He was a blessing like a fat cow [...] Hospitals were built. Schools were started."

Mwijila was perhaps guilty of the elders' tendency to exaggerate the golden years of his youth, but there is no question that in the 1920s, coffee became a sort of obsession in Bukoba, and that demand for imported commodities surged (ibid. 2003: 319).

The real problems would appear only at a later stage, when significant peasant rebellions took place against the colonial authority, each time bringing the latent tensions inherent in the compromises between British and the Haya to the surface⁶⁰. (ibid. 2003: 322). In 1937, the British used the spread of a plant disease as a means of legitimization in order to enforce the establishment of pure coffee plantations.

To achieve this goal, the "Coffee Rules" were introduced: Some of the orders were: (1) coffee plantations may not contain weeds, long grass, or woody plants other than coffee (3) no maize may be planted in the *bibanja* (4) when ordered by the Agriculture Department, plantains in a coffee plot are to be removed or thinned (etc.) (ibid. 2003: 323). To protect the coffee trees, which were planted in mixed cultures with banana and other trees, the farmers should be forced to remove all other kinds of plants growing in-between the coffee-plants, even their banana plants and thus their main nutritional basis, or otherwise they would face penalty (Eckert 2005: 20). The farmer households would thus have to give up their traditional farming system risking their food security. These measures conflicted with traditional practices and provoked significant Haya resistance. The Agriculture Department ordered chiefs to undertake inspections of peasant farms and to imprison or fine those found to be in contradiction of the rules. Some chiefs proved reluctant and the Agriculture Department intervened,

⁶⁰ Each crisis tested the limits of "custom" and "tradition" as the focal point of African political discourse (Curtis 2003: 322)

but when officials began to tour the district in February 1937, they were confronted by spear-wielding peasants shouting *Twaiyanga* - “we refuse to allow you on our farms”! (ibid. 2003: 323). Armed resistance to inspection teams was common, and large crowds gathered whenever an attempt was made to bring to court those who had either broken the “Coffee Rules” or resisted the trespass on their *bibanja* (ibid. 2003: 324). Rumours spread in the villages that the real intention of the government was to burn down trees and force peasants into wage labour – a suspicion fuelled by the rule allowing Agriculture Department officials to order the destruction of plantain plants. The Agricultural Officer reported that he had been accused of personally implementing coffee disease in the Haya region, so that the peasants would be ruined and forced to work for white settlers, who planned to come and take their land. Even when a local chief tried to explain that these were not the intentions of the ‘Coffee Rules’, the angry crowd “threatened to cut [him] into pieces” (ibid. 2003: 323f). The demands of the Haya were simple: let us cultivate our *bibanja* as we think best, and do not punish those who speak for us. Nevertheless, the administration refused to withdraw the ‘Coffee Rules’, and continued arresting and deporting farmers and their leaders (ibid. 2003: 324f).

In the 1940s, the Agricultural Inspectors were still empowered to enter plantations, but they were too anxious to do so. There was now much less emphasis on punishment, and more on propaganda and education of the farmers (ibid. 2003: 325). However, it only took 15 years until the Agricultural Department undertook a new campaign of agricultural coercion with the same political effects as in 1937. The *bikonya* legislation of 1953 ordered that older plantain plants, which could be vectors of disease, should be uprooted (ibid. 2003: 325). Again, farmers were protesting massively against this ordinance, and some precipitated and uprooted even their coffee trees. In December 1953, the police dissolved a farmer protest meeting firing tear gas into the crowd (Eckert 2005: 20). It was said that the farmers were bombed in the same way, as ex-soldiers had experienced it in the World War Two (Curtis 2003: 325). As a result of the British Campaigns, Bukoba production stayed fairly constant from 1930 until the end of the colonial period (ibid. 2003: 322). In summary, it can be stated that agricultural bureaucrats were constantly frustrated by their lack of control over peasant producers. The Haya had a great ability to make their voices heard and to influence the way that coffee was integrated as a cash crop into their society (ibid.

2003: 312 & 323). They were not rejecting commercialization and, therefore, experienced two very successful decades, mainly in the 1910s and 1920s, but they were not willing to let go of this at the expense of traditional agricultural practices. The massive resistance against British policies showed how strong the fear of losing their land to settlers and of being reduced to wage labourers (while unjustified in this instance) was. It also indicates how tenaciously protective African farmers could be of their peasant status (ibid 2003: 324). This ability led to the maintenance of their traditional farming and in this way also preserved agricultural biodiversity.

c) Uganda- Kiboga

Coffee cultivation in the Bukoba district during the colonial period was characterized through conflicts that arose due to the confrontation between pre-existing values of growing coffee and cash cropping imposed by Europeans. In Kiboga, there was no cultivation of crops in pre-colonial times that would have been of interest to the Europeans. Presumably, this was one of the reasons why the cash crop development in Kiboga caused far fewer problems.

The growing of cash crops in Uganda was initiated in 1901 with the completion of the Uganda Railway from the coast at Mombasa to the Lake Victoria port of Kisumu⁶¹. At the beginning of the colonial period, the British tried to introduce large-scale European settlement in a vast tract of land that should become a centre of cash-crop agriculture⁶² (Ingham et.al 2013: 1). These European plantations grew mostly coffee, tea and rubber. Early in the 20th century, the commissioner Sir James Hayes Sadler had already feared that Uganda would be unlikely to prove attractive to European settlers. From then on, they started to place more emphasis on the growth of a peasant economy. Indeed, the astonishing success of African peasant-grown cotton as an export crop in the early years of British rule soon overshadowed the relatively marginal performance of European plantation-grown coffee and rubber (Youé 1978: 164). Because of pressure from the British textile manufacturers that urged Uganda to provide raw materials for British mills, cotton was, at least at the beginning, the only cash-crop grown by peasants in Kiboga.

⁶¹ The production of cash crops should justify the exceptional expense and operation costs of the Uganda Railway.

⁶² White European settlers were often fleeing from economic deprivation to the new territories, and their goal was to establish themselves as farmers. The settlers were often unfamiliar with farming and produced what the railways and merchants requested (Friedmann 1982; 2005)

In contrast to Bukoba, the British followed a policy of *laissez-faire* in Kiboga: The government just distributed the cotton seeds but placed the agricultural production in the hands of the Baganda⁶³ chiefs, who were free to respond to the opportunity (Ingham et.al 2013: 1). Indeed they did: the Baganda chiefs quickly recognized the advantages of this crop and organized the cultivation on their fields in the first instance. As the population density in Buganda was amongst the highest in East Africa⁶⁴, adequate work force was available to grow the new crops. Baganda landholders also employed large numbers of immigrant labourers from Toro, Buyoro and Ankole to work for wages on cotton plantation in Buganda (Richards: 1973: 20). In this way, chiefs and landowners could grow big plots of cotton and quickly became so-called 'rural capitalists'. This plantation agriculture expanded steadily, until reaching a number of 104 plantations in Buganda by 1915 (Richards: 1973: 24).

Soon, peasants too began to grow their own cotton, finding it an easy crop to handle on small scale. They simply added cash cropping to the existing subsistence farming. As there was enough land available, they could just extend their cotton plots when their need for cash to pay taxes and school fees and to buy consumer goods increased. In this way, they did not have to give up their traditional subsistence farming system (Richards 1973: 24). In Buganda, peasant income from cotton rose spectacularly in the first years. The success of the first introduction of cotton in 1904 was indeed striking. Exports in Buganda rose from 241 bales valued at £1,089 in 1905 to 13,379 bales valued at £165,412 in 1910. By 1915, the value of cotton exports had climbed to £369,000, and Britain was able to end its subsidy for the colonial administration in Uganda, while in Kenya the white settlers required continuous subsidies from the home government (Richards: 1973: 1f).

However, this early success was not maintained. Cash crop output from Kiboga fluctuated (Richards 1973: 24). Particularly plantation agriculture suffered from the worldwide depression in commodity prices during the 1920s. The few estates owned by European authorities closed down, others were sold to Indian businessmen. Large-scale rubber production virtually ceased and coffee growing was but back (ibid. 1973: 24f). The peasant-sector of the economy proved remarkably resilient to adverse trade conditions and this, concomitant with increasing concern for the welfare of the

⁶³ Buganda is the kingdom to which Kiboga belongs. Baganda are the inhabitants (plural) of Buganda.

⁶⁴ This high population density was not only caused by natural increase, but also by large immigration into the area during the 20th century (Richards: 1973: 20)

African in Colonial Office circles, ensured the ultimate predominance of indigenous cash crops (Youé 1978: 164). The costs of cash-crop production, founded on peasant farming, were low, and the method of production was sufficiently flexible to weather and adverse trade conditions. However, the costs of producing rubber and coffee based on plantation farming were initially high, and the mode of production was extremely inflexible in the face of economic crisis (ibid. 1978: 164-184). As plantation agriculture decreased in prosperity, peasant cultivation rose in their importance to the economy. In the following years, small-scale farmers also began to grow coffee, decreasing their dependence on cotton as the only cash crop (Richards 1973: 25).

The post-World War II decade was marked by an increment of coffee cultivation in Kiboga and by the increasing importance of large-scale African farmers (Richards 1973: 33). Because of the rising crop prices, many cultivators were able to accumulate capital. This capital was used for buying and cultivating more land, or for expanding commercial off-farm enterprises. In this way, an agrarian middle class emerged (ibid. 1973: 31ff).

In spite of the long term advantages of the cultivation of coffee, it is likely that, at the beginning of the colonial era, many farmers felt that they could not finance the initial expense of cultivating coffee and survive until the trees matured. However, the general expansion of the economy in the 1950s allowed other sources of income to be utilized, for example trading, and this provided a basis of existence for the farmer until his coffee trees matured (ibid. 1973: 33). In 1955, the value of coffee had exceeded that of cotton. A light crop diversification, took place and food crops and secondary export crops, particularly maize, also gained importance. By the mid-fifties, a new and more diversified pattern of land use was evident in Buganda, but the peasants were still heavily dependent on one cash crop, namely coffee instead of cotton (ibid. 1973: 29-33).

d) Summary

By the time of independence at the beginning of the 1960s, the integration of rural peoples into the market economy had not yet been fully accomplished in any of the Sub-Saharan African regions. Rural communities, often residing in inaccessible areas, or engaged in productive activities outside of the cash nexus continued to practice

traditional communal forms of agricultural production and consumption, more or less free from commodity production and exchange (Mapolu 1990: www). However, in Bukoba and Kiboga, the process of integrating the rural people into the capitalist market was relatively advanced (Mapolu 1990: www). In many regions, the infrastructure from the railway system to the road system, as well as the security situation is estimated to have been better in the colonial period than at the end of the 20th century, allowing relatively efficient transport of agricultural products. In any case, socio-economic structures had been built in both countries to such an extent that they could ensure a more or less permanent flow of agricultural raw materials from Bukoba and Kiboga to the metropolis in the Global North (ibid. 1990: www). Additionally, there was a flow of consumer goods from North to South, but this was more limited and usually did not include foodstuffs. For instance, kerosene lamps, zinc roofs, bicycles, and European clothing found their way into Bukoba and Kiboga. However, most of the after-tax money was not spent on European consumer goods, but on inflated bride wealth payments, school fees and the construction of churches, schools, and hospitals (Curtis 2003: 316-319). Although the agricultural system has become market-oriented to a much greater extent, this aspect is unlikely to have affected the agricultural biodiversity excessively. Modernisation of agriculture did not occur as the peasant cash crop production was still mainly based on very simple tools and on internal inputs. In both districts, it was crucial for the conservation of agrobiodiversity that the production of cash-crops basically was in the hands of the African peasants and that the method of cultivation in monocrop-plantations was not a widespread phenomenon. In Kiboga this was not the case, because the British never even tried to make any kind of agricultural regulations that aimed at changing the agricultural system of the peasants and because most plantations were not able to survive the decrease in commodity prices of the 1920s. In Bukoba, the population resisted immensely against British regulations that focused on a shift from agrobiodiverse ‘bibanja’ to monocropping. Although the British imposed very restrictive rules, they actually cannot be accused of having the intention to destroy the peasant system. Politically, the British acted in both districts to preserve “tradition”, keeping the local kings as chiefs and incorporating them into the colonial administrative structure as “Native Authorities”. The British also used the “tribe” as their basic administrative unit (Curtis 2003: 316). The Baganda and Haya were indeed

fortunate, considering the forced labour, forced cultivation, and alienation of lands to settlers, which was the destiny of other Africans (Curtis 2003: 316). In fact, while these interventions had represented a great threat to agricultural biodiversity, agriculture in Bukoba and Kiboga was still carried out traditionally through small-scale cultivation by family units – they carried out subsistence farming but cash crop sector farming well. The salvation of agrobiodiversity was thus the fact that the small farmers still carried out their usual way of farming in addition to the cultivation of the cash crops and did not replace it with the sole cultivation of cash crops. Presumably, this is also due to the type of cash crops that were introduced in Bukoba and Kiboga: Crops that required significant on-site processing, such as sisal and sugar, demanded capital investment and a considerable scale of production. However, for the commercial crops introduced in Bukoba and Kiboga, i.e. cotton and coffee, incorporation into peasant farming made sense economically (Curtis 2003: 313f). Usually, the colonial state was content with its peasant agenda, as rural social stability was an important goal and they were often willing to try any sort of crop and encourage any mode of production (ibid. 2003: 313). Even today, the production in small-scale farming has its advantages: Coffee as well as cotton needs more than just raw labour. Intensive and knowledgeable cultivation can increase yields. Smallholders are more likely to acquire that knowledge as an agricultural proletariat, giving them a potential advantage over estates (ibid. 2003: 313). Moreover, the costs of cash production founded on peasant farming are at least at the initial stages mostly lower than the costs of production on plantations. Not only were agricultural small-scale systems more flexible to weather and pests, they were also more capable of reacting towards adverse trade conditions: the peasant mode of production was extremely flexible in the face of economic crisis and since there is relatively little to be gained by vertical integration, it made sense for the cotton and coffee industry to spread risk widely and push it down to the lowest level (Curtis 2003: 313; Youé 1978: 164-184). Why did the production of cash-crops not occur at the expense of traditional food crops? The quotation from a handbook commissioned by the colonial government of Tanganyika in 1958 explains why peasants could not easily be convinced of abandoning their traditional crops and exclusively focusing on cash crops and notes, that the production of traditional crops is a less laborious process:

“Whereas the staple food crops such as millet, sorghum, bananas, cassava and even maize are comparatively hardy and require only a minimum amount of care, greater effort is required to grow crops such as cotton, coffee, rice and tobacco successfully. It is sometimes forgotten that the effort required will only be expended if the African himself considers that it is worthwhile.” (Moffett 1958: 362)

In fact, cotton is one of the most demanding forms of crop production in terms of labour input. It entails carefully timed planting, sowing of seeds at regular intervals, periodic thinning of cotton plants, constant weeding, and rapid and careful harvesting to avoid spoilage (Tosh 1980: 85). Coffee trees, however, take a long time until the beans can be harvested for first time. Many farmers felt that they could not finance the initial expense of cultivating coffee, because of lacking resources to support their livelihood until the coffee trees matured (Richards 1973: 33).

Tosh (1980: 81) gives us another important clue why the production of cash-crops did not occur at the expense of traditional crops. He states that this was just possible because in pre-colonial times, the indigenous economies of tropical Africa were endowed with substantial resources of both land and labour, which remained unused. These productive resources - whether mobilized by initiative of the peasants, of foreign enterprise or government pressure - enabled cash crops to be grown on a substantial scale with minimal displacement of existing agricultural activities (Tosh 1980: 81). In fact, Kiboga and Bukoba were located in areas with more or less well-distributed rainfall and fertile soils as well as a high population density, so that sufficient fertile land and work forces were available. Especially Kiboga had a large and untapped labour potential: Although Baganda were then noted for their reliance on migrant wage-labour, the initial success was invariably achieved by local labour alone. Until colonial times, the male population of Buganda had mostly been uninvolved in agriculture⁶⁵. In these societies, the men quickly turned their energies to cash crop production (in most cases without prompting or pressure from the government) and the rest of the family could continue to grow traditional crops (ibid. 1980: 92). If both districts had not been in such an ecologically and demographically favourable position, the output of export crops during the colonial period could not

⁶⁵ By comparison with Asia and Europe, female farming undoubtedly has been prominent in Africa as anthropologists state that “so many of Africa's women are performing work which in Asia is undertaken by oxen.” (Goody 1976: 4)

have been achieved without a greater decline in subsistence production and thus agrobiodiversity⁶⁶ (ibid. 1980: 93). It was, therefore, the maintenance of the subsistence economy which provided the conservation of agrobiodiversity.

Anyway, it should also be noted that by the end of the colonial period, many of those small-scale farmers who, by and large, had accepted commodity production and exchange, frequently returned to subsistence economy when it suited them or when the commodity prices were not high enough⁶⁷ (Mapolu 1990: www).

2. The Second Food Regime – after independence and the (failed) Green Revolution (1960s-1980s)

Food security was central to the ideas of the post-war development project. After independence, agriculture was seen as a ‘pro-poor growth strategy’ for Africa. Thus, African governments were willing to invest heavily in the agricultural sector. Actually, it was not just the governments that tried to promote agricultural development after independence as the actors had multiplied: Aid agencies, research organizations, multinational corporations and international financial institutions (IMF, World Bank etc.) tried to influence the agricultural production and nutritional behaviours in East African Countries. Whether under socialist or capitalist leadership, various methods were used, but all had the same goal: to make agriculture more productive.

Under the framework of the Keynesian state/corporate capitalism, the United States introduced agricultural policies that subsidized both production and agricultural exports (Rud 2013: 8). This led to an over-accumulation of grain by the U.S. government. “Food aid” became the solution to the grain surpluses. These massive exports of agricultural products played a major role in the transformation of the global south from self-sufficient to importing countries, whereas the United States, Europe, and others became major export regions (Friedmann 2005). Unable to compete with

⁶⁶ In regions with poor soil and less frequent rainfall, like in Northern Uganda, the consequence of pressure to grow export crops was the abandonment of traditional labour-intensive grain-crops in favour of cassava. In these areas cash-crop farming was responsible for a decline in agrobiodiversity as well as in living standards in a particularly fundamental way.

⁶⁷ Usually, price incentives play a key role in the movement between cash crop and subsistence production. At times when it was not attractive enough to produce cash crops, the small-scale farmers simply grew their own food until rising prices made export crops attractive again (Mapolu 1990: www)

the cheap imported food, peasant farmers in the global south were forced to move from the countryside into urban areas (Rud 2013: 9). Until the early 1970s, Tanzania was, in fact, generally self-sufficient in food. Food imports have been a recurrent phenomenon to meet shortfalls in production from time to time, especially of rice and wheat (Djurfeldt 2005: 197).

It was also the post-World War II policies of food security that promoted the industrialization of agriculture, first in the nations of the Global North (EU). and later in countries of the Global South (McMichael 2004: 1). The so called **Green Revolution** was a major project initiated by the Global North in the 1960s, 70s and 80s that aimed to achieve food security and close the so-called ‘development-gap’ between the South and North by making the principles of industrial agricultural production available for the Global South. The Green Revolution thus became the political push for the introduction of new crops – mostly high output seed variations⁶⁸, and new animal breeds, irrigation, chemical fertilizers, pesticides and mechanization, international networking support and the external financing through loans⁶⁹ (Wolff 2004: 11). The Green Revolution was based on the assumption that the problem of agriculture was a purely technical problem that required a technological fix⁷⁰.

For the purpose of securing basic food production, the Green Revolution should allure a big part of the population in developing countries from subsistence agriculture and guide farmers of the global south toward industrial agriculture and toward production for the world market. The idea was that these countries should act as suppliers on the market. With the proceeds of their own production they could again act as buyers on the market (Shiva 1992: 19).

The Green Revolution has saved millions of lives, most particularly in Asia. Increases in yield enabled countries such as India to transform its agricultural economy from one in which famines were relatively common to one in which the country became a net exporter of food (Frison 2008: 1). Also Vietnam changed within less than three

⁶⁸ High-yielding varieties (high output seed variations) are characterized by a number of specific characteristics such as short growing season, high fertilizer input and high output, resistance to various plant diseases and insect infestations (Leisinger 1987: 4).

⁶⁹ As World War II came to an end, weapon factories were converted to produce domestic goods as fertilizers, pesticides, herbicides and farming equipment. Although the Green Revolution and its fertilizers and farming equipment were not a success in Africa it created a reliable global market for the agricultural industry (Höring 2007: 32).

⁷⁰ The emphasis was on the diffusion of technologies derived from the West.

decades from a net importer of rice to the second largest exporter⁷¹ (Salami; Kamara 2010: 39). But the model of food security that should be achieved through the Green Revolution not only led to major increases in production output, but also contributed – among other factors – to the global homogenization of production structures and market conditions. Prior to the Green Revolution, farmers in the Philippines grew more than 3,000 different varieties of rice. 20 years later, only two varieties were planted in 98 per cent of the country's paddies (Herre 2008: 200).

Wolff (2004: 11). considers agrobiodiversity loss as a “second-order problem”, to the extent that it is at least partly caused by efforts to solve other problems, namely food security. As a result, the efforts to eliminate hunger in the Global South have led to the reduction of the fundamentals of agricultural production: agrobiodiversity. The development, therefore, is paradoxical: the result of breeding for a high yield and homogeneity in order to achieve food security destroys the race, species and genetic diversity and, therefore, the resources on which the breeding itself is established (Wolff 2004: 11).

a) East Africa

The same seed specialists and foreign institutions (the Rockefeller Foundation was one of the most important stakeholders) which pushed the Green Revolution in the 1960s and 1970s in Asia and Latin America, tried to do the same in Uganda and Tanzania with strong support from FAO and the World Bank. Different projects supplied farmers with "packages" of modern seeds, fertilizers and other inputs. In contrast to Asia and Latin America, however, the outcomes in Africa were rather different. Most of these projects collapsed as soon as the consultant left the region and the farmers had to buy the packages (Höring 2007: 31f). It remains unclear why the Green Revolution in Uganda and Tanzania as well as in most of the Sub-Saharan Africa was not as great a success.

This probably has to do with the very eventful decades that were following the colonial period. After independence, there was a major policy shift from a market economy towards a socialist orientation in both countries. The governments of Tanzania and Uganda wished to break away from the export-oriented agriculture in

⁷¹ However, this increase in productivity must also be ascribed to market reforms which took place in the 1970s, especially the reform of land property rights, which markedly improved the economic incentives of farmers to use the land efficiently.

the colonial period and strived to pursue policies that were intended to be pro-poor and pro-food production. Amin (1990), however, does not believe that the failure of the Green Revolution lies in the socialist orientation of the two countries. He argues that the socialist policy was “not rejecting either the 'modernization' perspective or that of integration into the international division of labour” and he further states that “The socialist thesis of the time, suspicious of foreign capital, argued that the government was itself to compensate for the lack of capital, specifically with a view to effectively speeding up the modernization process” (Amin 1990). Hence, the socialist governments in Tanzania and Uganda shared the same “West-centred and technico-economistic view” (Amin 1990) in terms of consumption, organization of production, and administration.

Therefore, and in order to achieve the goals of the pro-poor and pro-food policies, small-scale agriculture had to become more productive according to the guidelines of the Green Revolution meaning the distribution of better seeds, more fertilizer, and large machines. To implement this modernization, a very radical agricultural development plan, which became known as the Ujamaa project, was drawn in Tanzania. The agricultural development in Uganda, however, was not based on any agricultural strategy anymore, after the nation descended into political chaos in 1966.

b) Tanzania - Bukoba

The Bukoba rebellion in 1957 occurred just as Julius Nyerere was about to organize the Tanganyika African National Union (the party that came to power after independence). Nyerere used the tear gas incident in Bukoba to argue for an end to the British mandate over Tanganyika at the United Nations (Curtis 2003: 326). After receiving independence from Britain in 1961, Tanganyika and Zanzibar formed Tanzania.

By this time, industrialization was viewed as the future growth engine of Tanzania. However, the question on how the expansion of the industrial sector could be financed was yet to be answered. Agricultural productivity was supposed to be improved through rural development in order to bear the costs of industrialization (Jennings 2008: 39).

The transition to independence in Tanganyika coincided with a visit by a World Bank Mission. In its report, submitted in 1960, the World Bank recommended a dual

strategy of agricultural modernization (improvement and transformation approach) for the agricultural sector. On the one hand, this should partly consist of settlement projects (transformation approach), and on the other hand of the improvement of the peasant farming method. The goal of the improvement approach was the better use of land through the use of modern techniques and thus of all the external inputs that the Green Revolution had to offer. The “capitalist” farmers were the main beneficiaries of the improvement approach and were mainly responsible for the improved food production after 1967. They were willing to adopt new technologies and, therefore, had vested interest in exploiting the links with the government and the market (Jennings 2008: 40).

The peasants, however, were more careful. Their response to the calls for modernization was selective. Although some marginal changes were recorded, the improvement approach failed to attract the peasants’ way of their conventional mode of production (Hydén 1980: 81). Thus, the ‘transformation approach’ had to be applied on these ‘backward’ peasants: The Commission of the World Bank study stated that modernization of agriculture could be achieved particularly effectively through the resettlement of peasants:

„The Mission concludes that quicker progress toward these ends is likely to be made, [...] by planned settlement of empty areas. When people move to new areas, they are likely to be more prepared for and receptive of change than when they remain in their familiar surroundings. And where people are under pressure to move or see advantage of doing so, they can be required to abide by rules and to adopt new practices as a condition of receiving new land.” (The World Bank 1961: 131)

In 1962, the new government approved of the World Bank recommendation to transform peasant agriculture to modern high productive agriculture through settlement schemes. The peasant agriculture should be transformed into a modern, highly productive cooperative agrarian society (Hydén 1980: 71). Therefore, the Ujamaa project was developed. Nyerere’s plan evolved around communal living, where everyone worked, for the benefit of the community, and also in the hope of benefitting from the Ujamaa community. By 1977, over 13,5 million peasants had moved into 7,300 Ujamaa villages. Bukoba became an example of the faulty

foundation of the Ujamaa village. The regional commissioner apparently hoped to gain prestige by the particularly rapid implementation. Within one year, six villages were founded. The blueprints for the villages were poor; three of the selected sites, for instance, were unfavourable due to natural conditions. This was especially true for the village of Rugazi, which was unreachable for vehicles during the rainy season. As it turned out later, the resettlement in Bukoba district happened mostly involuntarily; many villagers were forced to move in the Ujamaa village (Hydén 1980: 101).

However, the economy in Bukoba was getting worse, not only because of the forced relocation. In the 1960s, food crops were getting priority over cash-crop production, particularly in densely populated areas, like Bukoba (Hydén 1980: 80). Policies that were particularly restrictive and unfavourable for cash crop cultivation should bring farmers to produce food crops which could be sold at higher prices in parallel markets (Djurfeldt 2005: 202). In the 1960s, coffee production in Bukoba was additionally affected by the collapse of world coffee prices and a shortage of arable land and thus started to decrease (Rugalema et al 1994: 227). The government had given local co-operatives and state-run marketing boards a monopoly to purchase and sell peasant produce. Due to a number of factors, including lack of managerial experience and misappropriation of funds, the peasants witnessed a rapidly increasing inefficiency in the marketing system during the 1960s. Consequently, throughout the 1960s, peasants kept paying more money to sell their produce than they had ever done in the colonial period (Hydén 1980: 81). The farmers thus focused increasingly on the production of food crops. While in 1960 55 per cent of agricultural activities were concluded in Tanzanian subsistence agriculture, in 1968 it was already 71 per cent subsistence agriculture (Hydén 1980:81).

Generally, agricultural production grew significantly in the second half of the 1960s. This, however, was more in response to new acreage being brought under cultivation and to the population growth, than to the introduction of new technologies (Hydén 1980: 81). The 1970s and 1980s were, therefore, characterized by great efforts from the government to increase agricultural productivity through the use of external inputs and modern technology. In 1971/72, the government provided free agricultural inputs and tractors for ploughing services to new Ujamaa villages. Moreover, subsidies for fertilizers and pesticides for food and cash crops were introduced between 1976 and 1984 (Djurfeldt 2005: 201f). In terms of institutions, the period is characterized by

expansion of public institutions including those for agricultural research, extension and training which were responsible for supporting 'modern' production.

However, these steps did not lead to the expected modernization of agriculture (Djurfeldt 2005: 202). Policies in Tanzania were weak on administrative level as well as in terms of development and maintenance of irrigation and marketing infrastructure. The period was characterized by frequent policy and institutional changes which sometimes did not take account of institutional complementarity and the financial capabilities of the government. Excessive taxation of the agricultural sector at the local level was also blamed for having a negative impact on agricultural intensification (Djurfeldt 2005: 199). Therefore, under-funding and under-utilization of installed capacities became characteristic of many service public institutions (Djurfeldt 2005: 214).

Especially from the 1970s onwards, the forced dislocation of agricultural workers led to inefficiencies in production. Other principal problems in these settlements were related to government supervision and aid. The modernization of agriculture was heavily based on mechanization and external inputs. Agricultural production in the settlements was carried out with farm machinery of which the settlers themselves had little or no experience. Moreover, the farmers did not have the impression that the mechanization would facilitate their work (Hydén 1980: 72). For the farmers, modernizing agriculture implied a heavier labour demand and the dependence on outside agencies. Instead, the peasants preferred to send their surplus labour in search of livelihood elsewhere. Additionally, the economic autonomy of women, who have been mainly responsible for the cultivation of traditional vegetables, was negatively affected by the Ujamaa policy, since it empowered a small number of men with new rights over land use (Keller; Mndiga 2005: 411). Generally, the adoption of improved varieties was very low. Besides high yield, farmers preferred varieties that are palatable and aromatic, characteristics that were preferred by consumers as well (Djurfeldt 2005: 209). The peasants in the village settlements were both unwilling and unable to support the costs of the over-mechanization and over-administered schemes. Many of them soon faced bankruptcy and could only survive due to the willingness of the government to relieve their financial plight (Hydén 1980: 73).

In the mid-1970s, Tanzania witnessed a decline in farm production, including that of food crops, mainly due to drought and a massive displacement of rural people into

new Ujamaa villages. External factors such as the oil shock of 1973 also changed relative prices in such a way that imported agricultural inputs became more expensive (Djurfeldt 2005: 198). Additionally, Bukoba suffered from years of civil war in the neighbouring states of Uganda and Rwanda. In 1978 the region was even invaded by Ugandan troops and was subject to an attempted annexation by the former Ugandan president Idi Amin⁷². (Curtis 2003: 312). By the end of the 1970s, Tanzania imported twice as much grain as before Ujamaa. In 1983-85, the US "Food Aid" policies forced Tanzania to import large quantities of cereals to feed its people. Exports of cash crops fell by a third and GDP growth, which averaged at 5 per cent in the 1960s, slowed to a standstill. Nyerere's scheme for self-reliance and self-sufficiency made Tanzania heavily dependent on foreign aid (Africa Research Institute 2009: 3). Due to a lack of resources, resistance from the peasants and the ecological deterioration of arable land, the development and modernization of the agricultural sector could not be reached. An actual transformation of the resource-based peasant agriculture was, thus, not achieved (Hydén 1980: 81f).

In the 1980s, bickering between the capitalist right represented by the International Monetary Fund (IMF) and the World Bank, and the socialist left which retained control over Nyerere's government became more common. By the end of the 1980s, the poor economic situation and increasing pressure from the international donor community forced Tanzania to adjustments and reforms. With the ERP agreement between the IMF and Tanzania in 1986, the phase of Ujamaa could be considered terminated and Nyerere's African socialism was widely regarded as a failure. In 1992, Tanzania became a multiparty democracy (Waters 2007: 16).

c) Uganda - Kiboga

On 9 October 1962, Uganda achieved independence. The government under the socialist Prime Minister Milton Obote took over a 60 per cent share in major private corporations and banks in the country in 1970. Agricultural cooperatives⁷³ which were

⁷² The invasion of the Kagera region eventually led to the toppling of Idi Amin's government by the army of Tanzania.

⁷³ Still in the 1950s, British Colonial Office Policy encouraged the development of farming cooperatives in Uganda and Tanzania. Primarily, for the colonial officers, the cooperatives were institutions of social engineering that should help to avoid economic anarchy and to partially convert Ugandan and Tanzanian subsistence farmers to cash husbandry (Eckert 2005: 21). In addition, they provided effective marketing operations for the main cash crops: coffee, cotton, tobacco, rice and maize. In each political district, there was a co-operative "union" which built stores and, eventually and

originally set up during the colonial period dominated the marketing landscape in the decades to come. The structure of these cooperatives was vertical and hierarchical, with farmers at the lowest level sending their produce to the primary societies and the primary societies then sending it to the unions. The unions sent the produce to the marketing boards, which had the responsibility to find export markets for it. Especially the cooperatives involved in cash crops, tried to provide agricultural-related services to farmers until the mid-1980s⁷⁴. This system worked well, but in the 1970s, a large proportion of small farmers in Buganda turned their backs on commercial farming due to political turmoil (IFPRI 2010: 1f).

During Obote's first regime from 1962 to 1971, flagrant and widespread corruption emerged in the name of socialism. However, until 1971 the national economy had been reasonably well managed, and had seen a relatively rapid economic growth (Rujumba 1999: 180; Leggett 2001: 57). By the end of the colonial period, Baganda peasants had cash incomes higher than anywhere else in the country. However, in the 1960s, Obote pursued an agricultural strategy, which was designed to overcome the colonial legacy of "producing what we do not consume, and consuming what we do not produce" (Leggett 2001: 57). The collapse of world coffee prices was a further setback for commercial farming. Coffee farming was degenerating, both on large farms and smallholdings (Richards 1973: 33-43).

The fact that the two leaders after independence, Obote and Amin, were northerners was a factor in the further deterioration of the economic fortunes of the Baganda (Leggett 2001: 57). In 1966, two major crises occurred, because Buganda and much of its autonomy was revoked. When the regional parliament of Buganda requested the government of Uganda to depart from Buganda soil, Milton Obote seized the opportunity to crash Buganda (Rujumba 1999: 181). The troops killed thousands of unarmed peasants. The events of 1966 unleashed a repressive regime, which in turn spawned an army coup in 1971 led by Idi Amin. Apart from massive human rights violations and social disintegration, Idi Amin's six-year rule produced "[...] one of

with government money, processing factories. Before the establishment of co-operatives, the farmers sold their produce to Asian, mostly Indian, traders at poor prices. The number of farmers involved rose exponentially as the co-operatives made the profits that the Asian traders had previously made. By the end of the 1950s, there were already 617 cooperatives in Tanganyika, each made of 100 to 150 farmer households. In Uganda some 500,000 farmers joined cooperatives. It was a good approach and many small farmers benefited from it.

⁷⁴ At that time, due to political instability, liberalization of markets, and mismanagement, among other reasons, almost all the cooperatives failed.

the sharpest peacetime economic decline [sic!] of any nation in the 20th century.” (Rujumba 1999: 181)

The leaders spent more on the military, on personal security and on suppression of the opposition than they did on education, health care and agricultural development. The political insecurity and mismanagement combined with a lack of adequate resources, gravely eroded incomes from commercial agriculture in the second half of the 1960s and throughout the 1970s (U.S. Library of Congress 1990; Leggett 2001: 54). The 1979 war of liberation compounded the already bad situation as even the little remaining social and economic infrastructure was destroyed. Almost every manufacturing industry ranging from those for essential goods to those of capital goods had closed down due to mismanagement, lack of raw materials or shortage of foreign exchange (Rujumba 1999: 180). Because of the increasing inflation, low producer prices, the disrepair of the roads in the state, and the severely damaged marketing system of the cooperatives, the coffee export, which was the mainstay of the economy, had virtually ground to a halt. The little amount of coffee that was produced was smuggled to neighbouring countries. Essential goods like soap, salt, clothing and building materials were almost unavailable except for the military establishment. Peasants fully returned to subsistence agriculture, thanks to which they could survive. In fact, due to the good climate and fertile soils, Kiboga hardly ran short of food (Rujumba 1999: 180f).

By 1979, a functional economy was virtually non-existent and the situation was not much different by 1985. In 1980, Obote’s Uganda People’s Congress (UPC) Party won the elections again. The industry began to recover in the 1980s. The government rehabilitated ginneries and increased producer prices, but the years of Obote II still had a disastrous effect. Production levels in general were lower in the 1980s than in the 1960s.

A look at some few statistical indicators can tell parts of the story: In just 2 years 1978-1980, GDP declined by 14 per cent; 1984-1985 GDP fell by 10 per cent and in 1985 alone, GDP fell by 5.5 per cent (Rujumba 1999: 181).

Hyperinflation meant price increases of as much as 200 per cent per year, and the most basic and essential commodities were scarce. Wages became increasingly worthless and there were corresponding increases in petty corruption (Leggett 2001: 57).

Despite these serious problems, agriculture continued to dominate the economy. In the late 1980s, agriculture (in the monetary and nonmonetary economy) contributed about two-thirds of GDP, 95 per cent of export revenues, and 40 per cent of government revenues. Roughly 20 per cent of regular wage earners worked in commercial agricultural enterprises. Agricultural output was generated by about 2.2 million small-scale producers on farms with an average of 2.5 hectares of land (U.S. Library of Congress 1990). Thus, agriculture was still very small structured and was based on family labour and hardly on external inputs. Therefore, the level of fertilizer or pesticide use was extremely low.

Coffee continued to be Uganda's most important cash crop, but low volumes of export commodity production characterized the 1980s (US Library of Congress 1990). Between 1984 and 1986, the European Economic Community (EEC). financed a coffee rehabilitation program that gave improved coffee production a high priority. However, even this program had only limited success.

Recognizing that Uganda had no choice but to seek external financial assistance, Obote buried his initial economy strategy, which was designed to overcome colonial legacy of producing cash crops for the world market and negotiated funds from the World Bank and the IMF agreeing to increase agricultural production (Leggett 2001: 57).

d) Summary

Both countries started their independence with a strong emphasis on the modernization of agriculture. This should occur after ideas of the representatives of the Green Revolution and would accordingly have been at the expense of agricultural biodiversity. However, the years between 1971 and 1986 have been characterized by dismal economic and political performance in Uganda. In Kiboga, little if any constructive government activity could be detected under the rules of Presidents Milton Obote and Idi Amin. Thus, the original modernization of agriculture did not come to fruition under the precarious political situation and hardly any modernization or commercialization efforts have been made. Because of the political, military, or economic turmoil, farmers were facing many problems. Commercial farming nearly disappeared and subsistence agriculture remained the only operating sector of the economy (Leggett 2001: 54). Primarily, agricultural production still used traditional

methods of production on small, scattered farms, with low levels of capital outlay and virtually no inputs propagated by the Green Revolution. Therefore, and at least from the perspective of modernization and commercialization, it can be stated that the decades after independence presented no threat to agrobiodiversity. If these years had any impact on the agricultural biodiversity, it might have been a positive one because of the return to traditional subsistence agriculture. However, there are no studies that analysed agriculture under this aspect.

From the late 1970s on, the Tanzanian economy also took a turn for the worse. However, in Bukoba, strong efforts were made to modernize small-scale agriculture by the establishment of Ujamaa villages and the introduction and subsidizing of modern machines, fertilizers and improved seeds. Nonetheless, from the 1970s until the mid-1980s, there were various reasons that made it unattractive for farmers in Tanzania to produce for cash markets: food-prices offered by parastatal companies were artificially kept low; because of the population growth and the related land-scarcity soils could no longer bear the repeated harvests required for both the subsistence and market demands without using external inputs. External inputs, however, were either not available, too expensive, arrived late, or the farmers simply had no interest in them (Waters 2007: 16). The 1960s, 70s and 80s were, thus, generally characterized by a return from cultivating cash crops to cultivating food crops. This was partly due to the policies of socialist governments that favoured food crops, and in the case of Uganda it was also because of the disastrous economic and political circumstances. However, apart from the fact that the peasants in Kiboga were generally more concerned with survival than earning money, the appeal of growing surplus food crops instead of crops for export was considerable from the cultivators' point of view. This form of market agriculture was compatible with their top priority: to produce all their subsistence needs. In those regions, which were subject to wide variation in yields from one year to the next (because of ecological, political or economic constraints), the farmer preferred a cash crop, which could be held back and used for domestic consumption if the harvest proved bad, if prices that were paid for the crop were too low or if the marketing system collapsed. Food crops could not only create purchasing power but also functioned as a famine reserve (Tosh 1980: 89). This shift from export-oriented, non-edible cash crops to the commercial production

of food crops, which had its beginnings in the post-colonial period, would become even more significant 1980 onwards.

The experience from the colonial period, especially the coercive measures in rural areas like Bukoba under the British power produced a strongly conservative attitude amongst the peasants and resulted in refusal against modernization measures.

The unwillingness to adopt modern technologies was further reinforced when peasants were involuntarily moved into the Ujamaa-villages. Furthermore, many peasants simply did not perceive any benefits from these new technologies.

However, there are various studies that suggest that the failure of the Green Revolution cannot be reduced to the political events and the unwillingness of the small-scale farmers in Uganda and Tanzania, because East Africa was characterized by inadequate institutional and physical infrastructures that hindered an agricultural modernization based on external inputs and a strong global market orientation (Frison 2008: 1; Otsuka 2006; Bass 2012: 108, Altieri 2009).

The transportation infrastructure of Tanzania and Uganda was, for example, not sufficiently developed to facilitate the regular supply of small farmers with seeds, fertilizers, pesticides and the necessary technology to transport the produced crops to urban centres. Especially as a landlocked country, Uganda has very high transportation costs. Moreover, during the 1970s and 1980s, the road conditions in Uganda and Tanzania deteriorated significantly due to lacking maintenance work.

Another widely held theory among scientists to explain why the Green Revolution did not lead to the expected results is the theory that the approach was just limitedly suitable for the ecological conditions of East African agriculture. The challenges posed by climate, soil, geology, geography and the diseases and pests that can infest animals and plants, are mostly greater in tropical Africa than in Asian or Latin American regions. Moreover, the agricultural systems of East Africa are not as uniform as those in Asia. Since slope and soil types change over considerably short distances there is a high diversity of farming systems (Frison 2008: 1). The lack of irrigation facilities makes the cultivation of high-yield varieties more difficult. Due to the particularities of African soils and their fast salinization due to evaporation, the costs of a conventional large-scale irrigation project are three times higher in Africa than in Asia. Only up-to-date irrigation technology, which requires significant capital and maintenance, could bring the African project costs closer to the Asian benchmark.

Apart from the fact that expanding the irrigation could affect the water security of the country and could further perpetuate the erosion problem, the capital was and still is a crucial constraint in whole East Africa (Otsuka 2006; Bass 2012: 108).

In summary, scholars like Höring (2007: 33) and Frison (2008: 1) state that there are just a few agriculturally favoured regions in Sub-Saharan Africa that have enough good soil, irrigation facilities and climatic conditions to implement the technology packages of the Green Revolution.

Even if Kiboga and Bukoba probably belong to these favoured regions, at the end of the 1980s, agriculture in both countries was still characterized (perhaps even more than at the time of colonization) by small-scale farmers and their traditional farming methods.

Nonetheless, there is the notion that the failure of the Green Revolution in East Africa might be perceived as an opportunity, because it gives hope that Uganda and Tanzania will get the chance to pursue a better agricultural development. Industrialized agriculture, a model of agricultural development rooted in commodity production that damaged the environment, caused a dramatic loss of (agro-) biodiversity and traditional knowledge; it favoured wealthier farmers and drove many poor farmers deeper into debt. It is based on fossil fuel, fertilizer-dependent seeds and patent-protected plant varieties, which average farmers could not afford and which increased the dependency on foreign inputs. Peasants can easily do without these side effects of modernizing agriculture (Altieri 2009; Pimbert 2009: 3). The imminent challenge is not only about introducing new agricultural instruments. It is also about using reflexive strategies to avoid causing new problems in the future. Breeding improved varieties to achieve higher productivity will be important, and that task will depend on access to and use of the genetic resources inherent in agricultural biodiversity (Frison 2008: 1).

3. The Third Food Regime – neoliberalism (the late 1980-nowadays)

A shift from the Keynesian state/corporate capitalism to the neoliberal corporate capitalism became a political project to re-establish the conditions for capital accumulation and to restore the power of the economic elites. The previous U.S.-centred Keynesian food regime had laid the foundations for a ‘world agriculture’

integrated by agribusiness. Ironically, the internationalization of U.S. agribusiness intensified competitive dumping of food surpluses in the 1970s, as Europe adopted this model (McMichael 2004: 2). Starting in the 1980s, the U.S. tried regulating the world agricultural commodity markets via a program of liberalization. This process was formalized in the Agreement on Agriculture (AoA) and culminated in the 1990's WTO-centred Third Food Regime (McMichael 2004: 2).

The development of these neoliberal policies coincided with the burden of indebtedness of most developing countries. To resolve this indebtedness, the IMF and the World Bank insisted that agro-exporting was a key part of a structural adjustment, transforming farm sectors into segments of 'world agriculture'. Hoping to improve the foreign currency income from expanded agricultural exports, countries of the Global South opened their agricultural markets via minimum import requirements and reduction of tariffs and producer subsidies (McMichael 2004: 4).

The WTO Agreement on Agriculture purported to address the structural inequities in global agricultural trade in order to create a "fair and market-oriented agricultural trading system" (Uruguay Round Agreement, 1994 In: Wulff 2013: 24f). However, the Agreement on Agriculture contained numerous ambiguities that enabled wealthy countries to subsidize and protect the domestic agricultural sector while constraining the ability of developing countries to use tariffs to protect their small farmers (Wulff 2013: 24f). Samir Amin (2012: 332) regards this development as particularly dangerous stating that "[...] agreeing to the general principle of competition for agricultural products and foodstuffs, as imposed by the WTO, means accepting the elimination of billions of non-competitive producers within the short historic time of a few decades."

Even if the WTO-policies did not lead to their elimination, the participation in the world market became more difficult for small farmers. Due to the subsidization of agriculture, which could only be afforded by countries of the Global North, agricultural commodities could be sold on world markets at prices below the cost of production. Therefore, world agricultural prices fell from a means of 100 in 1975 to 61 by 1989, a 39 per cent decline. These 'world prices' which are by no means in relation to production costs anymore, negatively affect the livelihoods of farmers in the Global South and empower agribusiness (Wulff 2013: 24f ; McMichael 2004: 2).

The importance of agriculture as a "pro-poor growth strategy" for Africa has

increasingly been put into question since the mid-1980s. Supporting small-scale agriculture generally became quite unattractive. The public funding as well as bilateral and multilateral assistance were continuously reduced for the sector. This ‘agro- pessimism’ (Höring 2007) was justified by the low world prices for staple foods, partly caused by subsidization of the industrial agriculture in the Global North, and by the success of the ‘Green Revolution’ in other regions of the world.

a) East Africa

At the end of the 1980s after a high inflation, low industrial and agricultural growth and after being highly indebted, Uganda and Tanzania embarked on an economic transformation towards a market economy. With the SAPs⁷⁵ the two countries embarked on a program of economic reforms to stabilize the macro economy and to improve the effectiveness of fiscal and monetary policies (Joughin; Kjær 2009: 2; Bakunda 2008: 246f).

The IMF structural adjustment program began in 1986 in Tanzania, with additional agreements signed in 1987, 1991 and 1996. Uganda obtained the IMF loan through the Structural Adjustment Facility (SAF) in 1987 and it later extended its subscription under the ESAF program from 1989-1992 and again from 1992-1997 (Kingston 2011: 120; Hammond: 1).

The reforms included massive trade liberalization (tariff reduction and rationalization), abolishing export- and related nuisance taxes; and improving or simplifying export and import procedures, including trade facilitation services (IFPRI 2006: 3). The two countries also implemented a wide range of policy reforms that are complementary to trade policy performance, e.g. restructuring and privatization, a reduction of state involvement in direct production and marketing activities, institutional reforms and private sector development (Kweka; Kabela; 2008: 242). The targeted agricultural policies related to exports, pricing and marketing arrangements: Agricultural markets were liberalized, rural infrastructure was partly improved, subsidies on fertilizers and other goods were removed, state enterprises and cooperatives involved in agricultural services were closed or privatized (Kingston

⁷⁵ Structural Adjustment Programmes (SAPs) are economic policies for developing countries that have been promoted by the World Bank and the International Monetary Fund (IMF) since the early 1980s by the provision of loans conditional on the adoption of such policies. They are designed to encourage the structural adjustment of an economy by, for example, removing “excess” government controls and promoting market competition (WHO Glossary)

2011: 121; IFPRI 2006: 3).

Experiences with structural adjustment and consequent economic globalisation have been extremely contradictory and so is the state of the data. It is hard to get to grips with what may have happened on the ground because of the inaccuracy of economic- and agricultural related data. The old adversaries from right and left are still arguing whether the growth data validates the IMF-inspired policy or not.

To some degree, they succeeded in improving the macroeconomic performance of the two countries: By the end of the 1990s, inflation was reduced; the annual growth in gross domestic product (GDP) was markedly increased, and so was the foreign direct investment (IFPRI 2006: 3). Because of the economic growth spurts and the glowing reports by the IMF and World Bank, Tanzania and Uganda came to be seen as model adjusters on an otherwise troubled continent (Hammond: 1). But there were persistent questions as to whether the economic growth was being translated into a modernization and commercialization of small-scale agriculture.

b) Tanzania

Tanzania has achieved impressive growth rates. The annual growth in gross domestic product (GDP) at the beginning of the 1990s was increased for about 4 per cent, reached 6.6 per cent per year between 1998 and 2007 and is still high today with GDP growth projected at about 7 per cent in the medium term of 2013. Overall, macroeconomic performance has been strong, with inflation declining to single digits (AfDB 2013). The main driving forces behind the increased growth rate have been mining and services, but also the agriculture sector grew at an annual average rate of 3.8 per cent per year between 1990 and 2010, thus placing it among the top 15 performers worldwide during that period (Kweka; Kabela 2008: 235; FAO 2012: 32). One of the original motivations for the reforms was the attempt to reverse falling trends for major export crops—such as coffee, cotton, cashew and sisal - by means of offering better prices to farmers through heavy devaluation and by cutting down the number of middlemen in marketing through the liberalization of agricultural trade (Ponte 2002). An analysis of the data indicates production gains in the immediate post-liberalization period up to the 1990s. However, such gains have not been sustained, especially after 1994, when all subsidies for the agricultural sector, both explicit and implicit, were removed. Following the introduction of market

liberalization, agricultural input prices started to rise, and as a consequence, both the number of farmers using fertilizer and the application rate fell (Djurfeldt 2005: 199). The export boom that was supposed to follow the implementation of adjustment measures was prevented due to the declining world prices (Hammond: 1). Because of the low market prices, the production of most of the traditional export crops has continued to stagnate or even fall. This led to an increase in food crops such as beans and bananas (Ponte 2002).

Various estimates have indicated that there have been positive, though marginal, changes in the poverty profile of Tanzania, but not to the level needed to meet the MDG1- *Eradicate extreme poverty and hunger*. Most of the household surveys conducted in the last two decades showed that poverty is more prevalent among rural dwellers (African Development Bank 2010: 15). Despite Tanzania's high economic growth, rural household income poverty has remained virtually unchanged: "It does not appear from the best available data that income poverty has significantly reduced over the past decade. There are signs that income inequality has been growing"⁷⁶ (Kweka; Kabela; Musa 2008: 235). This illustrates the absence of noticeable changes in everyday-life circumstances and suggests that the peasants had not managed to move to a market-oriented industrialized agriculture.

c) Uganda

After more than two decades of rapid economic expansion, with GDP growing at an average annual rate of 7.1 per cent from 1992 to 2011 Uganda has also been considered a very successful country in Africa in terms of sustained economic growth (AfDB 2013). In 1998, Uganda even became the first country to receive the debt relief under the IMF and the World Bank Highly *Indebted Poorer Countries (HIPC)* initiative (Kingston 2011: 121).

Also the agricultural sector performed well, growing at an average of 3.8 per cent over the years 1987 to 2005, thus developing faster than the population growth at that time (Ministry of Agriculture 2010: 4). The agricultural development was strongly export-driven: the agricultural policy developed by the National Resistance

⁷⁶ Surveys carried out by the National Bureau of Statistics (NBS) show that between 1991 and 2007, poverty fell by about 5 per cent. Most of this change, though, occurred in Dar es Salaam. In rural areas, poverty declined marginally from 40,8 to 37,4 per cent (NBS: 2007). Because of the population growth, the total *number* of people living below the poverty line actually increased by 1.3 million in the same period (Policy Forum & Twaweza 2019: 2)

Movement (NRM) government that took office in 1986 was mainly aimed at the restoration of traditional exports like coffee, cotton, tea and tobacco with a view to increasing export earnings and the development of non-traditional exports to diversify the export base with products such as fresh fish and flowers (UWS 2006: 3).

Uganda still views market orientation and foreign trade as an important stimulus to contribute to agricultural development. The government under Museveni (president since 1986) seemed to prioritise policies aimed at facilitating production over targeted policies to reduce poverty. That is why the president squarely focused on roads and infrastructure as having a crucial role in eliminating rural poverty: „Before we talk of poverty alleviation and other such things, we should talk about the movement of goods and services. If people are able to sell their goods and services, they will be able not only to alleviate their own poverty, but to eliminate it completely through their own effort“ (Museveni, 1997: 183). This statement seemed to work at least in the 1990s. Ugandan peasants, especially those cultivating cash crops, have done well between 1992 and 1997. Because of the liberalized marketing policies, coffee prices increased markedly from USD 0.82 per kilogram in 1992, to USD 2.55 per kilogram in 1995. This was a period when poverty levels fell resulting in increased consumption by the rural farmers (Batuuka 2006: 426). This trend confirmed the Government’s view that the end of poverty lay in the liberal policy. However, since 2000, cash crop prices have fallen drastically and hence reversed the trend concerning the incomes of the poor (Batuuka 2006: 426). Batuuka (2006: 425) affirms that Africans are now in the serious dilemma of whether to produce enough food to feed their people or to produce for export in order to fight poverty.

According to the IFAD and the World Bank, Uganda has made enormous progress in reducing poverty, slashing the countrywide incidence from 56 per cent of the population in 1992 to 38 per cent in 2002 and 24 per cent in 2010. However, in Tanzania, this poverty decline mainly affected the cities; about 40 per cent of all rural people – some 10 million men, women and children – still live in poverty (IFAD 2013). It can thus be concluded that inequality has been growing in Uganda, both within rural areas and between rural and urban areas (World Bank 2011: 4).

Data from the Makerere University and from the African Development Fund report

that poverty restarted to increase a couple of years ago⁷⁷ (Bakunda 2008: 249). In the same years, the real growth in agriculture also hit unusual low points: It declined from 7.9 per cent in 2000/01 to 0.1 per cent in 2006/07. This rate of growth has been below the population growth rate of 3.2 per cent, implying that per capita, agricultural GDP has been declining (Ministry of Agriculture: 2010).

Have small-scale farmers in Uganda and Tanzania become more modernized and commercialized since market liberalization?

Generally, there is little evidence that market liberalization has led to increased modernization or commercialization of small-scale agriculture. In the first part of the following chapter I will describe some of the main agro-economic obstacles to commercialization and modernization and subsequently, this theoretical knowledge should be made clearer by applying it on our specific case studies.

Constraints to modernisation and commercialisation

- *Access to input and output markets*

Improved access to input and output markets is a key precondition for the transformation of the agricultural sector from subsistence to commercial production.

A major hypothesis why trade liberalisation has had limited impact on the peasant mode of production is the assumption that the link between trade and smallholders is too weak to have any considerable influence. Backward and forward market linkages are not fully in place since farmers lack both reliable and cost-effective inputs such as extension advice, mechanization services, seeds, fertilizer and credit on the one hand, and guaranteed profitable markets for their output on the other (Djurfeldt 2005: 209).

On the output side, marketing is underdeveloped and inefficient. Generally, it was not easy for peasants of Uganda and Tanzania to break into the world market. Peasants do not have the capacities at their disposal which are required to effectively participate in trade. Smallholder households responded poorly to domestic market liberalization, because many rural households are semi-illiterate, and because the required infrastructure and information are not given. At the producer level, farmers have very little information about prevailing prices, even in nearby markets. Farmers

⁷⁷ As world prices for grains and rice increased between 2006 and 2008, prices of every staple food in Uganda also rose substantially (World Bank, 2009). Households lost purchasing power and it appears that poverty increased by up to 2.4 per cent (Ministry of Agriculture 2010: 4)

have indicated that the primary source of market information is the marketplace itself, as well as neighbours and traders (Djurfeldt 2005: 209) since state marketing and pan-territorial pricing programs were terminated, small farmers in remote areas have found it especially difficult to market their crops (Bakunda 2008: 262; Hammond: 1). In addition, protection measures, quality requirements, health safety testing, certification/labelling requirements and environmental standards are still hindering access to the EU market because especially small farmers cannot meet these requirements (Höring 2007: 125). This has led to a growth in production of food for the market, and the traditional distinction between cash crops and food crops has been blurred, as many farmers now derive their main cash income from the sale of food crops (Djurfeldt 2005: 214).

On the input side, the average application rates of fertilizer for arable crops are estimated to be 30 kg/ha/year in Kenya, 14 kg/ha/year in Ethiopia, while being only 5kg/ha/year in Tanzania and 1 kg/ha/year in Uganda – far less than the world average of 100kg/ha/year (African Development Bank 2010: 26f). This is mainly due to the problem of high cost and waste of key inputs such as seed and fertilizers. For this reason, farmers have substantially reduced use of quality inputs such as seed, fertilizer, and pesticides. In 2006, for instance, it was reported in the UNDP (2007). that the respective use of improved seeds, fertilizers, agro-chemicals and manure were estimated at only 6.3 per cent, 1.0 per cent, 3.4 per cent and 6.8 per cent of the parcel of agricultural land in Uganda (African Development Bank 2010: 27). Also, the 2007 Tanzania's Poverty and Human Development Report revealed that 87 per cent of Tanzanian farmers were not using chemical fertilizers; 77 per cent were not using improved seeds; 72 per cent were not using pesticides, herbicides or insecticides (agrochemicals), as a result of high costs of agricultural inputs and services (African Development Bank 2010: 27). The lack of necessary inputs (fertilizers, improved seeds, etc.) is often also due to the lack of access of small farmers to formal credit.

- *Financing*

Rural poor farming households did not just become out-competed participants because they could not take advantage of the freedom of economic activity, but additionally because the role of the state was minimized under liberalization and they suddenly lost a large proportion of production and market support hitherto enjoyed

before liberalization (Bakunda 2008: 262). The public sector in Uganda and Tanzania is no longer involved in buying any farm produce while the private traders have not yet been able to integrate their operations vertically. Theoretically, farmers have a better access to the markets, but they are using less input than before due to the absence of subsidies and because of the higher prices. As a result, profitability in crop production has deteriorated (Djurfeldt 2005: 215). Furthermore, public breeding programs were shut down in both countries and since many state seed companies were privatized, peasants were encouraged to buy certified improved seeds, which they could not afford.

The high interest rates, coupled with the privatization of the Cooperative and Rural Development Bank, has virtually led to the disappearance of credits for small-scale agriculture (Hammond: 1). In the pre-SAP period Tanzanian and Ugandan peasants had access to credit through cooperative unions, but since the end of the 1980s such services have ceased to be readily available. Now credit schemes in Tanzania are on and off and are unreliable and, therefore, unlikely to sustain agricultural development in the long run (Djurfeldt 2005: 208). In Uganda there is also evidence that commercial banks shy away from lending money to agricultural production due to the risky nature of the business. In 2008, agricultural lending constituted only 12 per cent (Shinyekwa 2011: 8). Most farmers are bypassed not only by commercial and national development banks, but also by formal micro-credit institutions. For investment, smallholder farmers in both countries depend on savings from their low incomes, which limits opportunities for expansion (African Development Bank 2010: 22).

Furthermore, governmental spending on agriculture is also very low at an average of 6 per cent of total expenditures since 1980. In Tanzania, allocations to agriculture averaged only 3 per cent of the total budget during 2004–2007 and spending on research and extension comprises less than 15 per cent of the agricultural budget (Pauw; Thurlow 2010: 20; Kweka; Kabela; Musa 2008: 235). In Uganda reflects this trend with a comparably low level of funding to agriculture with rates fluctuating between 3 and 5 per cent of the total budget over the last ten years (2002-2012). (EAAFF 2011: viii). Research and extension services have been disintegrated and for any technological transformation ineffective (African Development Bank 2010: 28). The low public spending is a serious concern for modernization and

commercialization given the shortage of adequate rural infrastructure (power, roads and water supply, efficient input and output markets, and functional extension services) (ibid. 2010: 23).

Although the total amount of Official Development Assistance (ODA). to agriculture and rural development in East Africa has been increasing in absolute terms, the share of development aid to agriculture and rural development has followed a declining trend. It decreased from 11.8 per cent to 3.5 per cent between 1995 and 2005, only somewhat recovering to 5.4 per cent in 2007. Therefore, it is clear that there is inadequate funding for agricultural modernization in East Africa (African Development Bank 2010: 24ff).

- *Infrastructure*

Generally, high levels of genetic diversity for crops and varieties are characteristic of isolated communities (Country Report Uganda 2008: 16).

The rural infrastructure is still inadequate and poorly developed. Poor infrastructure continues to impede agricultural activities in Uganda and Tanzania. Water supply is mostly poor in rural areas of Uganda and Tanzania. The strong dependence of agriculture on rainfall limits its production growth enormously and leads to large fluctuations from season to season.

Above all, the road system is a prerequisite for market development in terms of distribution of input and output to and from farms. Infrastructural investments in the last 30 years were often ineffective as a result of poor design and poor maintenance, sometime due to stop-go practices of donors funding these investments (African Development Bank 2010: 27). The poor road conditions impair particularly in remote regions (URT 2008: 4). According to the 2005/2006 household survey, 30 per cent of communities surveyed in Uganda, did not have access to roads that were passable even in the dry season and two-thirds of communities lacked any bus or taxi connections. In most East African countries, more than half of the population lives five hours or more from a market centre (African Development Bank 2010: 28). For many farmers, the poor and often impassable roads as well the high transport costs are a barrier to produce for the market. Available estimates from Rukwa region in Tanzania for 2003 indicate transfer costs of up to 90per cent (Djurfeldt 2005: 206). The weak rural infrastructure and little existing processing facilities often result in

harvesting losses for the farmers (URT 2008: 4).

- *Policies*

Regarding Uganda and Tanzania, the African Development Bank (2010: 28f) states: “Institutional support to agricultural development [...] has been inconsistent and largely inadequate.” In their view, the inability of the governments to implement agricultural programs stem from weak administrative and technical capacity, particularly in ministries of agriculture. Even though Tanzania has instituted several agricultural reforms and strategies including the Agricultural Sector Development Strategy of 2006, most policies had no significant impact on the majority of smallholder farmers (African Development Bank 2010: 29). Despite the adoption of the Plan for Modernization of Agriculture in 2002 in Uganda, the smallholder farmers still receive a disproportionately small amount of developmental resources (ibid. 2010: 29). The current approach to commercialization in Uganda is based on the assumption of the failure of smallholders to perform, especially in recent years. There are several reasons to believe that the sectorial growth in Uganda dominated by the smallholders, has been better than reported in the national accounts. Nevertheless, the government has blamed the smallholders for poor immediate uptake of technologies and thus focused on the promotion of larger model farms. (World Bank 2011: 5). The Country Report from Uganda (2008: 16) confirms this view and in this regard expresses concern about the conservation of agrobiodiversity: “The agricultural policies for example the Plan for Modernization of Agriculture in Uganda, zoning of the country for specific enterprises aim at commercial production enterprises, which involve use of modern agricultural practices that encourage large scale monocrops, with the subsequent increase in threats of agrobiodiversity loss”.

In summary, the overall picture is that just some households have been able to make use of improved conditions (e.g. market opportunities, infrastructure) in the SAP and post-SAP period (Djurfeldt 2005: 215). Most of these reforms were not in favour of small farmers. For the majority of farmers, the improved market conditions have been offset by gravely felt constraints in terms of high input prices, lack of credit, low and uncertain monetary return from a marketed surplus and the removal of subsidies and public expenditures (Djurfeldt 2005: 215). Mainly larger-scale farmers that produced

export products such as coffee, cocoa, cotton, pineapple and other fruits, as well as cut flowers have influenced agricultural growth trends (Pauw; Thurlow 2010: v). The relatively bigger private producers and buyers could usurp the economic profits from the poor; they have been able to respond better to the incentives better and to negotiate selling prices with private traders, in contrast to the poorer farmers who were forced to sell at lower prices (Hammond: 1).

Zooming to the case studies: some empirical evidence

In the following chapter I will underpin the theoretical knowledge from above with my empirical observations. Based on field notes from the two study sites, Bukoba and Kiboga district, I will look for insightful symptoms which reveal information about the degree of agricultural commercialization and modernization. I will then provide an overview of the agrobiodiversity status in Uganda and Tanzania.

Agricultural modernization and commercialization in Bukoba and Kiboga district

Although there is a great variability in the way farmers manage their farming system in Bukoba and Kiboga, units of production are still small and there is only a rudimentary division of labour and little specialization. Without any real product specialization, there is very little exchange between the various units of production, and accordingly, the economic structure can be defined as cellular⁷⁸ and ‘not monetarian’. Now we look at the external inputs, the market orientation of agriculture, the agricultural infrastructure and the type of crops planted and animals reared.

Inputs. Capital investments in agriculture are minimal. Agricultural practices are essentially ‘indigenous’ in nature. Farming is still overwhelmingly dependent on the natural resource endowment, on human labour and simple hand tools (hoes and machetes). The use of mechanized technologies is virtually inexistent in both regions. Furthermore, the use of chemical fertilizer and pesticides is limited. Soil fertility is mainly maintained through crop rotation and the application of various types of

⁷⁸ The units are not totally self-sufficient, but to a great extent independent from each other.

organic matter like crop residues, grass, tree litter, household refuse, and domestic animal manure. All in all, expenditure on agricultural inputs to improve the returns from agriculture is minimal.

Market orientation vs. subsistence. Production is oriented towards subsistence needs as well as the market, but the major part of farm production is definitely used for household consumption rather than for the market. Ensuring the reproduction of the own household is almost a full-time occupation. Because of the rudimentary technology, meeting just the nutritional needs of the household is a cumbersome task. Therefore, it is mainly the surplus production from agriculture that is sold in the markets to finance the purchase of vital consumer goods and to pay for school fees.

Most farmers sell their crops at home, or on local markets. A considerable amount of trade is concluded in barter, rather than with money. Markets are still seen as major social events and are held only at weekly or monthly intervals. With regard to infrastructure, the most common means of transport is to carry luggage as head-loads on foot and by bicycle. Use of motorized transport (e.g. motorbikes) occurs marginally since there hardly are any asphalt roads. Apart from foodstuff, family expenditure is mainly on school fees, house construction, clothes, taxes, and to a limited extent on medicine or hospital costs, kerosene or batteries for the light (or radio), and credits for the mobile phone. These items are usually purchased in small shops in the larger villages or markets. Homes can be built within a single season using local materials. While traditional houses are made of grass and mud, wealthier households are gradually changing to (burnt or unburnt). brick houses and iron sheet or tile roofs. Instead of further commercializing agriculture, many peasants prefer to earn money from off-farm activities⁷⁹.

With regard to the food farmers in Bukoba and Kiboga, districts are to a very high degree self-catering. According to Focus Group Discussions (Bukoba). and Stakeholder Meetings (Kiboga), the basic consumption of the majority of families consists of cooking oil, salt, sugar, and tealeaves. Some families also regularly buy wheat flour, rice, garlic, onions, tomatoes, carrots and in Bukoba also sardines and other fish. Apart from that, peasants still grow, herd, hunt, and gather most of what

⁷⁹ These include brewing, pottery, food vending, carpentry, tailoring, shoe making and repair, charcoal making, iron and tin smithery, brick making, and masonry. Although off-farm activities are limited, most farmers, particularly in average and poor households, consider them important for their livelihood (Tumuhairwe; Nkwiine 2003: 182) Bukoba has a great number of lakes and many inhabitants undertake fishing as an economic activity.

they eat. Production by each family unit comprises, therefore, a wide range of products.

Agricultural Production. In general, farmers grow traditional varieties alongside modern varieties. Bananas and coffee are the most important food and cash crops. In both districts, banana plants became the staple crop, supplying the bulk of the people's carbohydrate food, but they also provide cash income⁸⁰. Recently, beans and groundnuts also have become important commodities. The agro-ecosystem is characterised by a combination of a banana-based home garden, and, eventually, small fields with annual crops that usually consist of maize or sweet potatoes. Home gardens are the basic production units and the centres of social and cultural wellbeing for farm families. Home gardens have a high diversity in crop species. While most of the crops are planted for food and commercial reasons, some weeds are also used as food, medicines, fodder, and for cultural purposes. Crops grown include bananas of different types (cooking-, brewing- and desert), together with coffee, and numerous woody species in intimate associations with herbs, annual and perennial crops and livestock, all managed on the same piece of land. The most important plant crops apart from bananas include maize, cassava, sweet potato, beans, groundnuts, yam, carrots, tomatoes, and, amongst others, pumpkin. Common trees in home gardens include avocado, jackfruit, mango, oil palm, pawpaw, and tangerine. The most common livestock are chicken, goats, sheep, and cows. The keeping of cattle is limited to a few farmers that keep primarily traditional livestock for milk and manure. Livestock are not consumed or sold regularly because they have both social and economic value.

Summary: In fact, evidence shows that modernization and commercialization occurred only marginally in the last couple of decades in rural East Africa. In summary it can be stated that food in Bukoba and Kiboga is grown or raised and harvested close to the consumer's homes. The food system relies upon a network of small family farms (rather than large industrially run farms) as the source of farm products. The use of inputs (machines, and other technical devices, fertilizers, pesticides) from outside the household or region is rare. We can find both traditional and 'exotic' animal and plant species, but the former prevails. Thus, the degree of modernization is limited. The household itself consumes the main share of the food.

⁸⁰ Banana growing is expanding at the expense of annual cropping. Production of some crops, like millet at sorghum and local potato varieties, has declined (Tumuhairwe; Nkwiine 2003: 141)

Distribution of food is managed over relatively short distances. The farmers grow cash crops, but the level of commercialization is limited. There is only little evidence of a strong involvement in, or dependence on the world market. If the agrobiodiversity status of a certain region is considered as the principal outcome of the degree of modernization and commercialization of a given food system, all these traits speak for a wide variety of species.

Defining agrobiodiversity status in Bukoba and Kiboga

The status of agrobiodiversity should have been defined through the production questionnaire. Unfortunately, however, we encountered a major problem during the implementation: Due to the length of the questionnaire, the farmers did not want to tell us about all of their plants. For every single crop, we inquired the variety of the crop, the source of planting material, the quantity of planting material, the area planted, date of plantation, whose crop it is, whose labour is invested, other inputs used, the date when the harvest began, the date when the harvest ended, the different forms of harvest (whether, for example, the leaves or solely the fruits of a crop are used). and for each of these different forms of harvest we enquired the amount of total harvest, the amount consumed by household, the amount fed to animals, the amount given away, the amount sold, the price at which the goods were sold, form stored after harvest, the amount stored, date use begun, date use ended, and the amount spoilt. All of these questions had to be answered not only for each of the species, but also for each variety. This was an impossible task, because it was simply too time-consuming, and because it was not the only exercise of the production questionnaire. It required such a long span of time to go through all these questions for just one single variety, so that the farmers would never talk about all their species and varieties that they were growing on the farm⁸¹.

During the Stakeholder Meeting in Kiboga, participants listed 48 different animal and plant species⁸² that the farmers in the region would consume regularly. During the

⁸¹ The first time when I was in the field with the production questionnaire, I insisted that the farmer should tell us about all his crops. After we had spent 5 hours at this household, the farmer and the enumerator became so annoyed that I had to allow them to quit the exercise. From then on, I stopped insisting and just ignored the vegetables in the home gardens that the farmer did not mention.

⁸² Kiboga: tomatoes, cabbage, watermelon, passion fruit, banana, pumpkin, beans, cassava, maize, irish potatoes, sweet potatoes, mango, yam, rice, guava, sorghum, groundnuts, soya beans, sugarcane, coco yam, tangerine, jackfruit, eggplant, oranges, amaranthus, pineapple, carrots, cow peas, butter berries,

Focus Group Discussions, farmers in Bukoba worked out a list of 51 plant and animal species⁸³ for food consumption. However, both lists mostly contain species and rarely any subspecies, and are very limited in their informative value.

Regarding the literature, scarcely any detailed information is available on the state of agricultural biodiversity in Tanzania and Uganda, not to mention the regions Bukoba and Kiboga. Proper documentation of the extent of agrobiodiversity reduction and genetic erosion is neither available, nor can it be determined to what degree this has been caused by human intervention or natural disasters. The majority of species that are utilized at a local level lack documentation that depicts their variation, but apparently, the process of retrieving this information from farmers for documentation is in both countries under way (Country Report Uganda 2008: 15).

The only reliable reports about plant diversity are the *Country Reports on the State of Plant Genetic Resources for Food and Agriculture*. It is a periodic assessment first published in 1996, followed by the publication of the Second Report in 2008/2009. The FAO was the initiator of these reports, which were prepared through a participatory, country-driven process. They provide a rough overview of the status and trends of conservation and the use of plant genetic resources at the national level.

State of diversity

Survey results have shown that an erosion of plant genetic resources occurs in both countries as a loss of landraces or traditional cultivars at an intra-specific level of main cultivated crops, and as affecting wild crop relatives and wild or semi-wild food species at the species level (Country Report Tanzania 2009: 18; Country Report Uganda 2008: 16). There are situations where new varieties have displaced the old varieties within a very short time span. In Tanzania, this is particularly true for maize. However, also in Uganda, some landraces (e.g. coffee, cassava, sweet potatoes, etc.) are being replaced in production due to their susceptibility to pests and diseases (Country Report Tanzania 1996: 16f; Country Report Uganda 2008: 16). The

goose berries, avocado, pawpaw, simsim, cow, goat, sheep, chicken, rabbit, pork, turkey, duck, fish, bees/honey, grasshopper, white ants, guinea fowl, quail, antelope,

⁸³ Bukoba: maize, beans, groundnuts, peas, cow peas, banana plantain, sweet potatoes, irish potatoes, bitter cassava, sweet cassava, yams, sorghum, millet, cabbage, eggplants, tomatoes, carrots, pepper, pumpkin, sugarcane, leafy vegetable, avocados, pineapple, mangoes, pawpaw, guavas, oranges, tangerine, jackfruit, white rubber wine, amaranthas, mushroom, masheka, mashasha, enyonzza, goat, cow, sheep, chicken, rabbit, pig, duck, guinea fowl, francolin/patridge, antelope, bushbuck, wild pig, grass hopper, termites, wild rabbit, embogo

magnitude of the potential risk regarding the loss of this material varies from species to species depending on distribution and location (Country Report Uganda 1996: 11). There are, as already mentioned, very few long-term studies which keep track of trends in this regard.

Generally, landraces and traditional cultivars are still used extensively in Tanzania and Uganda, allegedly due to the limited acceptance and supply of commercial seed of improved cultivars. It is estimated that in Tanzania, currently only 10 per cent of the total cultivated land is planted with certified seeds of improved cultivars, whereas the rest of the area is planted with farm-saved seeds of improved cultivars, traditional cultivars, and landraces (Country Report Tanzania 2009: 17). The same estimates can also be found regarding animal breeds in Uganda: only 10 per cent of the farm animals are exotic or cross-breeds; indigenous breeds of livestock account for approximately 90 per cent in the livestock census from 2008 (Owiny 2012).

The vast majority of Tanzanian and Ugandan farmers, estimated at 80 to 90 per cent, are still subsistence producers who value and take pride in using crop cultivars originating from their own societies or farming environment which are also very diverse (Country Report Tanzania 2009: 17). There is a great representation of agrobiodiversity regarding different crops and animals, which are well adapted to local production- and environmental conditions, household requirements and the different cultural values (Country Report Tanzania 2009: 17). Therefore, in home gardens, extensive amounts of genetic diversity are maintained even though the numbers of morphotypes and population sizes in any individual garden are often small. Despite neglect by agricultural research and development, poor communities continue to grow minor crops and market them at a low scale (Country Report Uganda 2008: 15).

How could agrobiodiversity have been preserved so well?

The degree of current commercialization and modernization and its constraints has a high informative value, however I would like also to analyze this question from a more rural point of view. This question is about human-environment relations – i.e. a complex phenomenon that consists of many factors; it is of natural as well as social nature. Social phenomena are always complex and cannot be broken down into simple ideas or explanations. One cannot generalize well in terms of a social group, since

there are many different settings that have to be considered and therefore, this is a very simplified summary of some crucial factors influencing agrobiodiversity.

Factors from a rural point of view

- **The subsistence nature** of farming that tends to encourage use of traditional varieties over a long period. For most crops, farmers still have very old varieties being grown concurrently with more recent varieties. Many of the plant species harvested from the wild or protected in backyard gardens in homesteads, are multi-purpose plants, with those of medicinal value contributing a significant proportion (Country Report Uganda 2008: 15). Nonetheless, food security is probably the most important factor that influences the choice of crops and varieties that farmers grow and maintain (Country Report Uganda 2008: 16). Many crops (e.g. yams) are maintained by farmers to ensure this food security.
- **Lack of access to improved seed.** The governmental seed supply systems are neither efficient nor aggressive enough to motivate farmers to fully adopt new varieties. The links and interactions between local plant genetic resource management systems and formal plant genetic resource institutions in Tanzania are limited and weak (Country Report Tanzania 1996: 16 & 2009: 17). It can be assumed that the same also applies to the seed supply system in Uganda. This leads to a mere traditional conservation and lack of consciousness of new varieties. Many traditional cultivars are often given names, which emphasize the qualities of the cultivars thus resulting in an easy sharing of information and seed between such cultivars. Seeds of traditional varieties are normally exchanged freely. As a result of these factors, traditional varieties are easily accepted and spread within ethnic groups (Country Report Tanzania 1996: 16f).
- **Preference for traditional varieties.** Partially, farmers believe that their varieties are superior to the new varieties in the major traits of interest to them. It is true that the older varieties tend to be more stable in many aspects (Country Report Tanzania 1996: 16). Indigenous animal breeds and plant varieties have unique genetic attributes such as adaptation and tolerance to drought, heat, diseases and in case of the animals the ability to utilize low-

quality indigenous forages (Owiny 2012). Therefore, traditional farming systems tend to have genetic diversity deliberately incorporated in them consistently and maintained as a risk insurance against environmental stresses (Country Report Uganda 2008: 16). Better palatability of the farmers' varieties also plays a role as peasants seem to prefer the taste of their old varieties.

- **Cultural/traditional uses.** Food has a strong symbolic and religious value and is highly associated with cultural identity and social wellbeing. Tanzania and Uganda have a wide range of cultures and some hundred different tribes. The traditional cultivars suit the different cultural values and are, therefore, maintained (Country Report Tanzania 2009: 17). The survival of certain cultivars can be linked to specific accompanying management practices, and use. For example some cultivars of bananas, millets, sorghums are retained in production due to cultural practices and ceremonies that make use of them. For specific varieties their cultural/traditional uses are, therefore, key factors in their survival (Country Report Uganda 2008: 16).
- **High prices.** And last but not least, high prices, which small-scale farmers cannot afford, are a profound reason why farmers prefer their old species. This applies not only to seeds, but also to animal breeds. Some peasants seem to be aware of the advantages of exotic breeds and would be willing to replace their traditional breeds with exotic breeds, but they simply cannot afford it. Farmers also believe that improved varieties require inputs like fertilizers and pesticides, which are costly and difficult to get in time (Country Report Tanzania 1996: 17).

Small-scale farmers value genetic diversity in their agricultural systems and this is exemplified in their efforts to preserve it. They appreciate their palatability, robustness and the stable yields. Many homesteads have special plants either for medicine, food or other uses that are maintained in the back-yard gardens (Country Report Uganda 1996: 11). In any case, the low replacement rate of traditional varieties and breeds with exotic ones cannot be only attributed to the particular liking of landraces, the non-availability and non-affordability of exotic seeds and breeds play a role at least as important.

d) Summary

In this chapter I will summarize the developments of the Third Food regime.

The liberalization experience exhibited similar traits in both countries, namely mixed results. Tremendous gains have been achieved in Tanzania and Uganda in the areas of economic growth and stability as well as in terms of government revenue. With respective GDP growth rates of 6.5 per cent and 7.3 per cent in 2008, Uganda and Tanzania have been able to realize a high GDP growth per capita (African Development Bank 2010: 12). Economists even speak about the “decade of growth” and indeed economic growth brought advantages for the population e.g. more poor children are enrolled at school, more assets are owned etc. In Tanzania, agriculture remains the main contributor to the GDP, contributing 43 per cent. Meanwhile in Uganda, agriculture contributed only marginally to the country’s rapid GDP growth from 2005 to 2008. Instead, growth was driven by services, particularly by trade (African Development Bank 2010: 12).

It seems that the “decade of growth” has not translated into similarly impressive changes in the life circumstances of the peasants (Diao; Thurlow 2012: 1). Most of the small-scale farmers in Bukoba and Kiboga are subsistence farmers that operate with very simple tools, hardly use external inputs and do not have access to improved seed or animal breeds, and in many cases do not seek the latter. Plantations are still a rare sight and the degree of specialization and commercialization is generally low. This ‘lack of agricultural development’ is certainly in favour of the conservation of agricultural biodiversity, and in fact the Country Reports of both Tanzania and Uganda do not convey an alarming situation regarding potential agrobiodiversity loss. It is estimated that in Tanzania, currently only 10 per cent of the total cultivated land is planted with certified seeds of improved cultivars and that only 10 per cent of the farm animals in Uganda are exotic or crossbreeds. It must be emphasized, however, that agrobiodiversity loss is perceived as a secondary problem by the governments that are still promoting large-scale farming and input-intensive agricultural practices. Accordingly, the scientific information level about agrobiodiversity status leaves much to be desired in both countries, not to mention the protection measures.

Nonetheless, agrobiodiversity got off lightly in a manner of speaking, and yet the rural developments in East Africa cannot generally be perceived as positive since poverty also remained firmly entrenched in the country’s rural areas: As of today,

about 38 per cent of people living in rural areas of Tanzania and 40 per cent of the rural people in Uganda are classified as poor (IFAD 2013; Kweka; Kabela; Musa 2008: 233; Bakunda 2008: 249).

Along with persistent income poverty and growing income inequality, Tanzania also suffers from high levels of undernourishment and malnourishment, which can be considered a sign and symptom of various social and economic processes in society. As data from the FAO (2013) show, the prevalence of undernourishment first increased from 28 to 41 per cent between 1990 and 2000 and then fell only slightly, to 33 per cent in 2013. Hence, in the early 1990s, the nutrition situation was better than ten years later in the early 2000s and nowadays in 2013, the number of undernourished people is still higher than 20 years ago.

TANZANIA	1990-1992	2000-2002	2005-2007	2008-2010	2011-2013
Total Population (million).	26.3	34.9	39.9	43.5	47.7
Number of undernourished persons (million).	7.6	14.4	14.2	15.9	15.7
Prevalence of Undernourishment (per cent).	28.8	41.3	35.6	36.5	33.0

Figure 6: Table of undernourishment Tanzania FAO 2013 ⁸⁴

In Uganda, the situation of undernourishment is also highly precarious. While the country's average caloric intake per person per day improved between 1992 and 1999 from 1,494 to 2,193 calories, it declined again to 1,971cal. in 2005 (Ministry of Agriculture 2010: 5). As far as the proportions of the Ugandan population that is faced with food insecurity are concerned, the numbers reduced from 83 per cent in 1992/93 to 59 per cent by 1999/2000, before rising back to 66 per cent in 2005/06 (Ministry of Agriculture 2010: 5). Undernourishment still affects 30 per cent of the population, a proportion which has slightly increased over the last two decades considering that the prevalence of undernourished persons accounted for 27 per cent in 1990 (FAO 2013).

⁸⁴ : <http://www.fao.org/hunger/en/>

UGANDA	1990-1992	2000-2002	2005-2007	2008-2010	2011-2013
Total Population (million).	18.3	25.0	29.4	32.4	35.6
Number of undernourished persons (million).	5.0	6.6	8.6	10.2	10.7
Prevalence of Undernourishment (per cent).	27.1	26.3	29.3	31.6	30.1

Figure 7: Table of undernourishment Uganda FAO 2013 ⁸⁵

These developments would suggest a decoupling of growth, poverty, and nutrition: The rapid economic as well as the agricultural growth over the past twenty years have both partially failed to improve rural poverty and nutrition outcomes. This is certainly due to the enormous population growth that occurred in the last two decades (since 1990 the total population nearly doubled in both countries), but it also indicates that it is the structure of the economic and agricultural growth and not the level that is currently constraining the rate of poverty and malnutrition reduction (Pauw; Thurlow 2010: v).

Agricultural growth during the last twenty years was mainly attributed to a few large agricultural companies in Uganda and Tanzania that could take advantage of the liberalization of markets. The current excessive focus on the commercialization of agriculture turned out to be unsuitable to unleash the constraints to inclusive agricultural growth. Rapid aggregate GDP and agricultural growth have, therefore, not led to improvements in overall socio-economic conditions for most of the population. From this perspective, it is hard to argue that the economic transition over the last two decades in Tanzania and Uganda has been an exclusive success (Pauw; Thurlow 2010: 1; AfDB: 2013; Policy Forum & Twaweza 2019: 8).

The World Bank country analysis suggests that, because of where the poor live, income growth in rural areas is approximately four times as efficient in reducing poverty incidence as growth in towns. Moreover, agricultural growth can be particularly effective in reducing hunger and malnutrition (World Bank 2011: 4). Agriculture remains a key development sector in all the low-income African case studies: agricultural growth tends to reduce poverty to a greater degree than any other form of economic growth. Therefore, and especially in reference to Uganda, the World Bank (2011: 4) advocates the promotion of agricultural growth in a wider

⁸⁵ <http://www.fao.org/hunger/en/>

range of subsectors than those which are currently leading the growth process. If modernizing agriculture is understood as large-scale capitalist agriculture with an essentially technical approach and without addressing the political, social and ecological dimensions that are critical for transforming agriculture, real improvements cannot take place (Bazaara 2010: 3; Pauw; Thurlow 2010: 20).

The African Development Bank (2010: 43) related to both countries when it stated that “[re]vitalizing the agricultural sector, and in particular smallholder agriculture, is a precondition for achieving high and sustainable growth, poverty reduction and food security in East Africa.” (African Development Bank 2010: 43)

Discussion: From small and powerful to small and outcompeted

What now follows is a summary of the upper section. It is the chronological summary of the agricultural development in Uganda and Tanzania since colonialism with the emphasis on modernization and commercialization. Subsequently I will discuss the emerging findings and devote myself to answer the questions why the structure of agricultural units has remained small, why the farmers continue to practice subsistence farming, and why it did not come to the "outside" desired modernization and commercialization.

Summary of the historical development of modernization and commercialization

1) During colonial times: The beginning of commercial farming - a cash-crop revolution

Smallholder agriculture and agricultural biodiversity in Tanzania and Uganda have been facing numerous constraints since colonialism. While some are unique to Tanzania or Uganda, many are of a similar nature.

During colonial period, the districts were integrated into a trading system that was shaped to meet the interests of British elites. Britain pursued economic policies that drew both countries strongly into the world economy. In many regions of the world such as parts of Latin America, cash crops like coffee were produced on large plantations. Labour systems on these estates have varied, from relatively relaxed seigniorial systems to harsh regimes of state-backed capitalist extraction (Curtis 2003: 313). In other areas, and characteristically in Uganda and Tanzania, cash crops have been produced on a small scale. Also in the Kiboga and Bukoba district, cash crops have mainly been added to existent native subsistence agriculture rather than by instalment of new plantations. For a long time, it was assumed that commercialization and the introduction of cash crops would eliminate the prevailing agricultural system, possibly at the expense of agricultural biodiversity. Richard (1973: 2) states that the old dichotomy between subsistence versus cash crop agriculture is out of date. In this point he is definitely right as far as the colonial period is concerned, because back

then, there was enough land and labour available, in order to maintain the cash-crop production next to their traditional diversified local small-scale production. In this way, the original agriculture, which was rich in different species, could be maintained for domestic supply, and cash crops were simply added through intercropping or by tilling new fields. This was also the reason why the colonial period did not represent a major threat to agricultural biodiversity (Youé 1978: 164-184).

Nevertheless, especially in Tanzania, conflicts between peasants and bureaucrats were endemic: European pressure to cultivate coffee conflicted with established planting procedures and the ceremonial value of coffee in the Haya society. Questions of what to grow, and how to grow it, generated constant undercurrents of tension. The farmers in Bukoba fought greatly and successfully against monocrop-farming methods that would have come at the expense of agricultural biodiversity and food security. Nonetheless, it was a cash-crop revolution that occurred during these years.

Both districts were exceptionally prosperous at the times of independence; they actually belonged to the main cotton and coffee producers in East Africa. In fact, colonialism had profound effects on Kiboga's and Bukoba's economy and on the livelihood of the population in these regions. Although the farmers became very wealthy, they did not spend much of their profit on consumer goods and technology from the Global North, or on purchasing new land to increase the area under cultivation. The farmers rather preferred to invest in the construction of churches, schools, hospitals and in bride prices. In this manner, cash cropping remained characterized by small-scale agriculture based on simple technology and marginal inputs from outside the farm throughout colonial times.

2) After independence: Failure of Green Revolution - levels of commercialization could not be increased

After independence, there was a major policy shift from a market economy towards a socialist orientation in both countries. The socialist governments in Tanzania and Uganda were willing to invest heavily in the agricultural sector and shared in this regard the same West-centred ideas of how to increase agricultural production.

Especially due to the pressure emerging after the World War II to produce large quantities of cheap food, large-scale commercialization and mechanization of agriculture has become dominantly manifest all over the world. The Green Revolution

introduced pesticides and fertilizers, and high-yielding varieties started to replace the huge diversity of local varieties and genotypes. Consequently, enormous increases in production were made possible by the Green Revolution since the 1960s all over the world. Nonetheless, for several reasons, small-scale agriculture and land use have continued to exist in Uganda and Tanzania. It seems that at the time of colonization, agriculture was not less "modern" and probably even more commercialized than at the end of the 1980s.

In fact, Samir Amin states that the failure of 'agricultural development' has been more dramatic for Africa as a whole than for any other particular region. Africa has only slowly started to revolutionize the agricultural sector "without which no further stage of development can be considered" (Amin 1990). The production and productivity per rural family have been almost stagnant for long (ibid. 1990). In fact, the average farmer in sub-Saharan Africa produces only one ton of cereal per hectare – less than half of what an Indian farmer produces, less than a fourth of a Chinese farmer's production, and less than a fifth of an American farmer's production (African Development Bank 2010: 19).

Historically, it must be considered that during the 1960s and 1970s, Uganda has suffered from years of civil war that destroyed any kind of economic activity except for subsistence agriculture. The political situation under the rule of Milton Obote and Idi Amin was unstable and precarious to such an extent that any kind of modernisation and commercialisation was impossible.

The Tanzania and especially the Bukoba district, also suffered from civil war in Uganda and Rwanda, but comparing to Uganda the country was politically stable during the socialist government of Nyerere. Nonetheless, the modernization of agriculture still did not advance as much as the government had expected. In Tanzania, the failure in the modernization of agriculture probably derived from the coercive measures under Ujamaa that produced a strongly conservative attitude amongst parts of the peasant population and resulted in some farmers refusing modernization measures. Small-scale farmers in Bukoba were partially relocated under compulsion in community villages, where advanced equipment and modern seed was provided by the state. However, the farmers felt that the technology gave them no advantage, because it was not suitable for the respective areas and they could not bear the costs of modernization. Those farmers in Uganda and Tanzania who tried

to adopt conventional methods of farming mostly failed because the external inputs were very expensive and thus not sustainable.

3) The last 25 years: Market liberalization – Peasants becoming outcompeted participants

At the end of the 1980s after being highly indebted and with low industrial and agricultural growth, Uganda and Tanzania embarked on an economic transformation towards a market economy. With the SAPs the two countries implemented an extensive program of economic reforms. By the end of the 1990s, inflation in both countries was reduced; the annual growth in gross domestic product (GDP) was markedly increased, and so was the foreign direct investment. Tanzania and Uganda have achieved impressive growth rates and this trend confirmed the Government's view that the end of poverty lays in the liberal policy. However, there is little evidence, that market liberalization has generally had benefits on small-scale farmers over the last 15 years or to a stronger modernization or commercialization of small-scale agriculture.

Since the Green Revolution, and thus the modernization of agriculture was much more successful in most other parts of the world than in Sub-Saharan Africa, small farmers became outcompeted participants. Especially in the 1990s, during the period of the SAPs (Structural Adjustment Program's) when both countries embarked on a program of economic reforms to liberalize their markets and any financial support from the state ceased to exist, it became generally difficult for small-scale farmers to sell their goods at a reasonable price, as the enormous increase in agricultural production all over the world and subsidisation of agriculture in the Global North created prices with which African small farmers simply could not keep up.

In addition, most of these reforms were not in favour of peasants inasmuch as most smallholders were not able to take advantage of the liberalization of agriculture. The measures promoted especially those farmers who had already been larger and had more capital available. The WTO is accused of having created a trading system that has favoured the interests of countries of the Global North since the late 1980s.

Summary

Fate has been unkind to Bukoba and Kiboga since independence. It seems that since

the colonial days, little has changed in the relative importance of the agricultural, industrial, and other sectors of Uganda's and Tanzania's economy. Today, the role of East African peasant seems to be not very different from what they were during the colonial period (in contrast to Asian farmers). Agriculture is still run for at least 80 per cent by small-scale farmers. 'Outsiders', whether Europeans, South Asians, the own Government, International Corporations or Research and Development Organizations were rarely allowed or able to invest in production (Youé 1978: 164-184). The share of imports in the total domestic resource consumption is low, and so is the level of dependency on the outside world. Peasants still rely entirely on their own family labour – they collect water by hand, gather firewood by hand, dig by hand, and harvest by hand. The fact that so much agricultural work is carried out on a small scale by unpaid family workers means that a significant sector is classified as 'non-monetary'. Indeed, for many farmers in Uganda and Tanzania, the concept of 'the market' is a distant one (Leggett 2001: 54). As Uganda and Tanzania will always be vulnerable to changes in world commodity prices, peasants are unlikely to soon embark on an exclusively monetary economy.

Discussion

- **Why did production units remain small and the degree of commercialization limited?**

Large-scale economically not viable

What we have, learned from the example of Kiboga and Bukoba are the fact that commercialization of agriculture does not go hand in hand with their modernization and that the change to large-scale commercial farming does not inevitably take place when cash crops are introduced (Richards: 1973: 9). In Bukoba as well as in Kiboga, the basic unit of cash-crop production would remain small – also in the decades following the colonial period. Although there were some capitalist agricultural producers in both countries, these remained limited (Leggett 2001: 54). Today, sugar-cane estates between Kampala and Jinja are the principal vestiges of the attempt to create a plantation economy in Uganda.

Attempts to introduce large-scale crop plantations were economically not viable.

Plantation agriculture has never played anything other than a secondary role in the development of the Ugandan and Tanzanian colonial and post-colonial economy (Youé 1978: 164-184). Especially uncertain prices and uncertain access to markets have resulted in agricultural structures remaining small and unspecialized. Richards (1973: 8) states that peasant income from cotton and coffee rose spectacularly in the first years of the last century and thereafter with intermittent rises and falls, but the inducements were evidently not sufficient to tempt the peasant to take the risk of large scale farming, and, therefore, the traditional system continued to persist. Incentives to produce exclusively for markets have remained insufficient over many decades. The commercialization of agriculture was impeded by bad transport infrastructure, poorly developed support services and information systems about prices and especially in Uganda also politically highly instable periods. (URT 2008: 3).

However, unspecialized small-scale structures had one major advantage: Peasants who grow, for instance, coffee certainly suffer when market prices tumble, but as poor as they might be, they do not face the ruin of estate producers in the same situation (Waters 2007: 19). Wild fluctuations in world commodity prices do not threaten them as hard, because they did not cease to grow their own food. Especially after the colonial era, when farmers began to pay less attention to cash crops in order to sell more food crops instead, they were even less dependent on market prices. The prices of bananas and beans they produced, for instance, might have fluctuated less in market value, and most of the production never entered the market place anyways. Even today, the rains, crop diseases, and the availability of arable land still have more effect on productivity, than the world commodity prices (Waters 2007: 19).

During the financial, economic and world food price crises of the last seven years, both small and large-scale farmers have been affected. However, smallholder farmers are affected to a lesser degree because of their high level of independence; they are less interwoven with the world financial markets, and thus less exposed to the losses than large-scale farmers (African Development Bank 2010: 35). On the one hand, the lack of access to international financial markets and emerging market chains - like supermarkets - prevented East African smallholders from realizing high income and achieving high productivity growth during booms, but then again, the lack of exposure to international economics saved them from the direct effects of the financial and economic challenges (African Development Bank 2010: 35).

The most important aspect, however, in why peasants did not want to concentrate exclusively on cash crops, was food security. During the colonial period, the market for locally grown foodstuffs was very limited. Even the most successful cash crop producers did not show much inclination to rely on the market for their subsistence needs during this period⁸⁶ (Tosh 1980: 91). In fact, Tosh (1980: 78) speaks of a cash-crop revolution that took place, but he would not associate it with the creation of a ‘cash economy’ in the full sense of the term. In a time, when the money economy was not yet widespread and famines were still occurring frequently, it was unreasonable for the farmers to grow exclusively (inedible) cash crops.

Vent-for-surplus theory

Nevertheless, it is surprising that hardly any significant commercialization change the two regions has occurred, since the two districts were so prosperous during colonial times; investments in trade and education during the colonial period seemed to bring a bright future (Curtis 2003: 312).

The fact that the initially high success of commercialization could not be maintained can be explained as follows: According to the **vent-for-surplus theory** of export growth, which was originally developed by Adam Smith and later applied to the modern developing world by Hla Myint, the productive resources of an “underdeveloped country” only become fully utilized at the point when it enters international trade and experiences effective demand for the first time. The slack in the traditional economy means that producers using indigenous technology can grow for the export market while still maintaining domestic production at its accustomed level (Tosh 1980: 81). The success or failure of cash cropping is according to this theory mainly determined by the availability of surplus land and labour – the underutilization of the factors of production is the decisive point. In fact, prior to the Second World War land shortage was, with few exceptions, unknown in East Africa. Surplus land could be taken up for cash crop farming simply by expansion of the household plots. Furthermore, labour resources did not constitute a barrier since Bukoba and Kiboga belong to the most populated areas in East Africa. Furthermore the men of the Buganda – tribe were apparently not performing much work in

⁸⁶ The only substantial group of cash-crop farmers, which had ceased to grow the bulk of its food by this time, was that of the groundnut-growers of Senegal and Gambia, and their needs were largely met by imported rice. Elsewhere, the vast majority of cash-crop farmers in tropical Africa remained wedded to the attitudes of the part-subsistence cultivator (Tosh 1980: 91).

agriculture before the colonial era and could quickly turn their energies to cash crop production.

At least with regard to surplus land the situation in both districts is now pretty different (Tosh 1980: 82). The population in Uganda and Tanzania has more than doubled since independence; the dimensions of available land decreased, and thus the addition of cash crops to the food-producing economy became more and more a cause of a serious strain. Farmers in Bukoba and Kiboga district are further confronted with a continuous decline in soil fertility and the soils could no longer ensure the cultivation of both cash and food crops (Baijukya 1998: 147). As neither a monetary based economy nor any other sectors (industry or services) had developed, and land became scarce, farmers saw themselves increasingly forced to grow food crops at the expense of cash crops in order to feed the growing population.

➤ **Why can a subsistence peasantry still be persistent in the context of the enticements of world markets?**

The condemned live longer - Or the theory of the uncaptured peasants

Samir Amin (2012: 332) states that modernization has always simultaneously integrated some, as expanding markets created employment, and excluded others, who were not integrated in the new labour force after having lost their positions in the previous systems. Furthermore, he argues that in its ascending phase, namely during the colonial time, capitalist global expansion integrated many, but that now in times of neoliberalism, in the 'third world peasant societies', it is excluding massive numbers of people while including relatively few. World system theorists like Amin thus blame the international capitalist economic system, to be responsible for the extinction of peasants. Small-scale farmers are represented as the big losers in the capitalist system, living on borrowed time.

Göran Hydén (1980), which represents an important literary source for the next chapter, shares many views of the world-system theorists, he also recognized that small-scale farmers sooner or later have to give way to a more productive agriculture. However, he does not regard small-scale farmers as victims of capitalist expulsion proceedings to the same degree. He rather speaks of the 'uncaptured peasants' and their impressive ability to oppose the power of capitalism.

The World System theory argues that the development strategies implemented in

Africa since independence have basically extended the colonial pattern of integration in the world capitalist system. Again, capitalism leads to the predominance of a market economy, which in turn produces a system of specialization and enlargement of the production units – thus changing local food systems, endangering agrobiodiversity, creating a ruling class that appropriates the surplus from the production, and replacing ‘unproductive’ modes of production with more “modern” ones that meet the requirements of capitalism. Whatever the political situation was, and regardless of whether the colonialists, merchant minorities, government officials, or aid officials designed the rural economic programs, subsistence peasantry in Uganda and Tanzania was rarely free to ignore the mandate of commercialization and modernisation (Waters 2007: 20; Curtis 2003: 314). In fact, Uganda and Tanzania have their share of capitalist farmers, but actually, small-scale farmers still carry out more than 80 per cent of agriculture.

Hence the question arises, why a subsistence peasantry can still be persistent in the context of the enticements of world markets? Göran Hydén, Toni Waters and Kenneth Curtis have contributed greatly to answering this question. They substantially argue that peasants are insensitive to market incentives and modernisation because of their independence. The majority of the rural producers still reproduce themselves without much dependence on inputs from other sectors. This independence made them influence the course of events on the continent so strongly that finally they are less integrated in the cash economy than peasants elsewhere (Hydén 1980: 9).

The incorporation of the peasants into the capitalist economy definitely had the effect of making peasants purchase some of the items, which were formerly produced within the household, but this is still to a much more limited degree than elsewhere⁸⁷. The peasants’ dependence on the economic capitalist system is still marginal (Hydén 1980: 10-14).

Nonetheless, a peasant community may still be involved in commodity production and buy some consumer goods – based on the capitalist criteria of exchange value – but this need not be its dominant culture: “Even if it is affected by the wider capitalist world economy, the village community is not just a replica of the larger society and the global economy.” (Hydén 1980: 4) Capitalism has modified the social structures of Africa, but the latter are still influenced by the peasant mode of production, which

⁸⁷ A Latin American peasant, for instance, requires a much greater involvement in modern economy in order to meet his basic needs.

continues to exist in a controversial relationship with capitalism. They constitute two contending modes of production: the capitalist and the peasant mode (Hydén 1980: 23). Thus although peasants produce cash crops, contribute partially to a wider market and are thus partially incorporated into the capitalist economy, the pre-capitalist social formations survived and with them the peasant mode of production remained in existence, and this prevented the decline of agrobiodiversity. For the conservation of the local small-scale food system and agrobiodiversity it is not only relevant to consider how capitalism has altered the forms of surplus extraction in underdeveloped countries but mostly how capitalism has affected the means of production (Hydén 1980: 21).

The autonomy of the peasants and the limits of the state power

It is difficult to incorporate peasants into the capitalist system not only because of the poor land development of East Africa and the high numbers of peasants but also because they are capable of securing their own subsistence and reproduction without assistance of other social classes (Hydén 1980: 29). Peasants in East Africa are still the owners of their own means of production (mainly land and labour) that makes them enjoy a degree of independence from other social classes that one cannot find to the same extent in other continents (ibid. 1980: 9). Peasants grow, raise, gather and hunt what they eat, build their own houses, partially still doctor their own illnesses and prefer to send their children to private schools instead of public ones. It is this autonomy and the control of the means of subsistence that evokes much of the power of the small peasants in Africa⁸⁸.

The government capacity for the mobilization and extraction of resources is seen as a particularly crucial aspect to change the peasants' mode in order to achieve economic development. The relative autonomy of the peasantry leads, however, to the absence of effective means to control their economic activities and to strong limitations of 'political engineering' (ibid. 1980: 183).

In modern society, the state is an integral part of the prevailing production system. The state is called upon to regulate and manage productive activities as demanded by the use of the means of production. The modern human being enjoys no autonomy

⁸⁸ Although I'm against portraying farmers as 'the poor victims' (see description of study site) I know that the situation of the farmers is not satisfactory the way it is (disease, malnutrition etc.) and thus their strength should not be romanticized.

from the system and thus cannot ignore it (ibid. 1980: 23). The relationship of the state to the smallholder producer in rural Africa is different. Capitalist reproduction in Africa is only at an initial stage. Thus, the classes to which capitalism gives rise are far from the position, which they may attain in societies where the capitalist mode of production is effectively dominant (ibid. 1980: 29). The petty-bourgeoisie has been in strong need of the surplus product of the peasant, but the production of the basic necessities is still controlled by peasants.

The peasants have power as long as they can stay indifferent to what the ruling classes offer, or can obtain the offered goods through alternative channels. This independence also causes partially a reluctance to embrace the opportunities offered by labour markets and, therefore, market forces were not yet able to 'get through' to the peasants. To get the peasants interested in the schemes of capitalism, the African 'petty-bourgeois leaders' must offer a tangible benefit to the peasants. If they can not offer clear advantages of commercialization and modernization, they are obliged to buy the support from the peasants with measures that facilitate their social reproduction, for example, schools, health dispensaries, water, roads and other amenities that peasants appreciate (ibid. 1980: 30). However, currently, rulers of Tanzania and Uganda have not even been strong enough to implement successfully these measures and have thus been unable to make the peasants effectively dependent on their policy measures. Except for the case of emergency (for example, when the local peasant community fails to secure livelihood because of a natural disaster) the state does not really exert influence on the solution of the peasants' existential problems, as there are no (well working) social systems provided (e.g. health insurance, pensions etc.). This, however, does not mean that there is no interaction between the state and the peasants (ibid. 1980: 24).

Their ability and will to avoid getting caught in relations of dependence certainly derives from the fact that the small farmers could not rely on the skills of the African state to ensure them a better standard of living up to that point (Hydén 1980: 32). In this way, land and labour would not be transformed into easily marketable commodities (Curtis 2003: 313).

However, the inability of the central government to reach its citizens is certainly not unique to the African smallholders. Already Karl Marx (1852) wrote about his frustration with the inaccessibility of French peasantry:

“Their [The small peasants] mode of production isolates them from one another, instead of bringing them into mutual intercourse. The isolation is increased by France’s bad means of communication and by the poverty of the peasants. Their field of production, the smallholding, admits of no division of labour in its cultivation, no diversity of talents, no wealth of social relations. Each individual peasant family is almost self-sufficient, it itself directly produces the major part of its consumption, [...] the great mass of the French nation is formed by simple addition of homologous magnitudes much as potatoes in a sack form a sackful [sic!] of potatoes.”
(Marx 1852 – 1978: 608)

Between the lines, we can read about the trouble that modernizing central governments must have had with imposing policies on remote subsistence farmers who engaged in subsistence agriculture. Marx saw the peasants in France as not even remotely as revolutionary as he wished them to be; a view that we can still find in the rhetoric of modern development planners and governments (Waters 2007: 10). The strength of subsistence peasantries in the face of centralized markets and the state comes strongly from this relative autonomy of the many small units of production (Waters 2007: 10).

There hardly is any doubt that in Uganda and Tanzania, the peasant mode of production will be overpowered by more effective modes as has happened to the peasants in France. However, until now capitalism has not been able to pave the way for its own expansion. This cannot be blamed on capitalism solely, but rather on the strength of the pre-modern structures (Hydén 1980: 4). Hydén claims that “small is powerful in Africa because it is sustained by an active peasant mode of production with its own alternative economy” – the “economy of affection” (ibid. 1980: 33).

The ‘economy of affection’

Amin (2012: 331) takes the view that various specific systems and logics rule the production mode of societies, which are not yet incorporated by the capitalistic market economy, but not those, which rule capitalism in a market society, such as the maximization of the return on capital. Also Malinowski (1920) and Mauss (1990) emphasized that exchange in pre-modern subsistence societies was not about market

advantage, and the accumulation of material wealth, but about the establishment and maintenance of relationship. In other words, social relations are what generated economic exchange, and not the opposite (Waters 2007: 18).

Göran Hydén (1980: 19) finally pursues the thought about the absence of certain capitalistic characteristics (like the pressure to increase productivity, specialization and maximization of profit) to that what he defines as the *economy of affection* which prevails in pre-capitalist societies. In the *economy of affection*, economic action is not motivated by individual profit alone, but is embedded in a range of social considerations like kinship, common decent, common residence, common religion and other affinities. These social considerations provide the basis for organized activity and allow for redistribution of opportunities and benefits in a manner, which is impossible where modern capitalism or socialism prevail and where formalized state action dominates the process of redistribution. For example, individual starvation is virtually absent in these societies, because of the strong cohesion between the members of the *economy of affection* (Hydén 1980: 14; 19). This results in pre-capitalistic societies making fewer investments for personal profit, but investing more in maintaining their position in kinship community or religious network, because it may pay off in the long run. Already during the colonial period, as the small-scale farmers in Bukoba and Kiboga suddenly possessed large amounts of money, they preferred to invest it in projects of 'public welfare' such as the construction of churches, schools and hospitals instead of investing it in the expansion of the production unit, machinery or personal consumer goods.

In the 'developed world' personal relationships and dependencies, which form the basis for a subsistence economy in East Africa and basically guarantee survival, have been superseded by commercial or government services (ibid. 1980: 18f).

Based on the social logic of the peasant mode, the economy of affection negates many of the power relations and the immanent pressure that characterize the modern economies. Successful growth for example is much more important to industrialized societies than it is to pre-industrial ones. Without it, modern society, whether capitalist or socialist, is highly vulnerable (ibid. 1980: 2, 19). Not having the pressure of the maximization of the return on capital, the pressure of specialization and rationalization falls away in pre-capitalistic societies.

Hydén (1980: 14) argues that peasant societies are more humane in terms of business

than those where the law of capitalist value prevails, but they are at the same time less efficient. The cost of reproduction is high and it leaves the peasant with limited interest in adopting practices that may raise agricultural productivity. Agricultural modernization can even be seen as a threat to the domestic orientation of the peasant household (ibid.1980: 14).

Still, despite their independence, peasants never wanted to ignore the mandate of commercialization completely, especially when times were good for cash cropping and the advantages definitely outweighed the disadvantages. Mostly, they relied on a certain amount of cash, as they always needed to buy the most important necessities, pay school fees and bride prices (ibid.1980: 10-14). The fact that the farmers reject the dependence on the capitalist system does not mean that they are not interested in earning income and in becoming more 'modern' and productive. However, considering the number of failed attempts at agricultural modernization, it is clear that the question of how to achieve this 'agriculture development' is not easy to answer.

➤ **How does the farmer emerge from the traditional conditions and become more commercial and 'modernized'?**

Different environments make the difference!

To understand the constraints for peasant societies not being able to become more productive, one needs to consider factors, which are very site-specific. The success of cash-cropping depends on many conditions: e.g. the availability of land and labour; soil and climate; the system of land holding and land use; the form of the family unit; the provision of capital or loans; the propinquity of railways and markets; the type of supervision; advice and educational service available; the size of the farms etc. (Richards: 1973: 9). Modern development planners and governments often do not take the time of first hand observation of farming systems and present the commercialisation of agriculture as an economically costless process. However, the entry of tropical African societies into cash-crop production was even during colonialism when peasants still had enough land and labour at their disposal, and could render large profits, a much more disruptive experience than either liberal economic theory or colonial apologetics would allow (Tosh 1980: 93). Even today, under the assumption that cash-crop farming means the abandonment of older forms of exchange production, which impose fewer social strains, or a decline in standards

of subsistence, many farmers are not willing to take the risk of integrating into a greater market (Tosh 1980: 83).

In addition, scientists, development planners and governments often come up with proposals that cannot be implemented on the respective peasant societies. Hydén attributes this incompatibility to the different *environments*: The scientific-technological development in the Global North that had been accelerated under capitalism and that was equally essential to socialism presupposes an *inorganic environment*, a *nature artificielle*. Thus also scientists who emerge from these scientific-technological systems are product of the *nature artificielle* and operate with a “universal” mode of man, which is derived from an *inorganic environment* (Hydén 1980: 245). Thus, the scientist follows the dictates of a world very different from the natural one in which the peasant operates and has solutions to problems of production that have been developed in an different environment (ibid. 1980: 15). Living and working in an organic environment, the farmer is better placed than the scientist or technocrat to provide the right know-how, which is needed to implement changes and innovations on peasant economies. He / she is often more aware of the dangers that go along with innovations and knows how to make use of the various components of the existing resource-endowment in the best possible way (ibid. 1980: 16). The natural environment and the subsistence economy can easily be regarded as permanent 'backdrop' features which persist irrespective of whether the society in question has any exchange relations with the world economy (Tosh 1980: 82).

Richards (1973: 2) assumes that farmers in Uganda only put the security that is provided by the *economy of affection* at risk, when the peasant sees the possibility of a dramatic change in his social situation. Peasants respond to the stimulus of being able to make a big step forward rather than to the prospect of a gradual advance year to year. They thus need, for example, a dramatic rise of salaries and also some sizeable support, usually extra labour, to enable him/her to pursue this lead (Richards 1973: 2-5). During the colonial period, the peasants were probably closest to achieving these conditions, but in the following decades, the conditions to enlarge and further commercialize production were not good enough due to the absence of transport facilities, the fluctuating world market prices, the resettlement in Ujamaa villages in Tanzania and the politically unstable situation in Uganda. Generally, the family labour was insufficient to enable them to put more land under cultivation and they had

insufficient capital that would have allowed them to pay outside labour. Most of the peasants also had only limited experience to efficiently enlarge their commercial activities (Richards 1973: 2).

Waters (2007: 17) and Hydén (1980: 236) doubt that the small farmers will be capable to jump on the 'bandwagon of modernization'. Under these conditions, experience has shown that subsistence farmers will continue to defy the intrusion of state and marketplace and will resist conquest by other social classes as long as they have the capacity to 'escape' from it. Only when the escape route is blocked, integration into a modern economy will begin (Waters 2007: 17; Hydén 1980: 236). A crucial means to achieve this scenario rests in the obstruction of the availability of arable land. Therefore, as long as land is available for cultivation without reference to the marketplace, there is little need for a subsistence peasantry to evolve into the type of specialized skilled labourers (Waters 2007: 16). But as soon as peasants are excluded from land by a central government's intent on modernizing (i.e. gaining access to international markets) and thus lose the means to secure their own livelihood, the peasants' mode of production will give way to the capitalistic mode of production (Waters 2007: 31).

Hydén (1980: 237) concludes that

“[...] by holding the barricades against capitalist penetration the peasant mode has saved the many small rural producers in Africa from the type of proletarianization that characterizes the peasantry elsewhere in the Third World. At the same time, however, the resistance and resilience, of the peasant mode means that there is a very limited indigenous base for development of a modern economy, capitalist or socialist.”

Until Uganda's and Tanzania's economies and material base remain largely pre-modern, they will not easily respond to capitalist or socialist policy solution. These limits of state action represent a main problem to use the state as an instrument to 'regulate' or 'develop' peasant societies (Hydén 1980: 3-26).

Economically, Bukoba and Kiboga districts have seen better days. Production is low, considering their history of cultivation (Weiss 2003: 185). Except for certain export commodities, such as coffee, they do not contribute to the wider market. And even the coffee economy in Bukoba and Kiboga now supports a tedious status quo of just

getting by. A few peasants have the resources to supply modest inputs that could make a difference to coffee output, such as pumps, fertilizers, and pesticides, but most of the peasant families carry out farming on small scale, with family labour, mostly traditional species, very simple tools mostly using the hand hoe and machete as well as relying on a low use of external inputs (Curtis 2003: 312).

Doubtless, it is due to the persistence of these low input and unspecialized small-scale food systems that agricultural biodiversity is still in a good state. However, some of these peasants who dispose of this genetic wealth are increasingly confronted with severe socio-economic problems and face poverty. Given the rate of undernourishment and poverty in large parts of rural East Africa, small-scale farming systems should not be romanticized and to remain at, or a return to pre-industrial conditions in order to save agrobiodiversity can definitely not be seen as targets of agriculture. How can Uganda and Tanzania reform their rural sector to increase the standard of living of the people and to produce the expansion in productivity required to feed a growing population without destroying the biological diversity that is nature's survival principle?

Taking stock ‘Agriculture at a crossroads’

Agrobiodiversity conservation and agricultural development - an insurmountable antagonism?

After the agricultural sector seemed to have been overlooked in the international development debate for two decades, the African rural area is finally back in the spotlight. There is a general consensus that agriculture needs to become more productive in order to feed the growing population, but does this necessarily have to be at the expense of small-scale farmers and agricultural biodiversity?

The substantial issue to be raised is which path the African agricultural system is to take, in order to feed the world population while simultaneously preserving a healthy ecological basis, to which agricultural biodiversity belongs.

Wale (2011: 6) puts the problem in a nutshell when she writes that “agro-biodiversity conservation is not just a matter of ensuring the continuous survival of traditional varieties; it is a question of sustaining and enhancing the incomes and survival strategies of the rural people with which crop genetic resources are entwined. The challenge will be to develop cultivation systems that are a workable compromise between what is good for the farmers and what will benefit biological diversity.” A challenge, however, which governments seem to be far from finding a solution for. It seems that modernisation of agriculture and agrobiodiversity are maintaining a strong antagonistic relationship.

The positions of those advocating a technology- and market-oriented approach and those taking account of local conditions and structural ecological aspects seem irreconcilable (Herre 2008: 200).

Defenders of the old strategy

Since small-scale farmers in the South turn out to be the majority of people suffering from famine, agrochemical corporations come to the conclusion that the world must produce more food, and that works best with more synthetic fertilizers, pesticides, genetically modified seeds or homogenous and high performing livestock.

It is undoubtedly important that yields increase, but food insecurity cannot solely be attributed to productivity. There are several structural problems in Uganda and Tanzania that add to the precarious situation. As productivity increases, it is equally

significant whether the increases are under the control of the farmers that produce them, or whether the benefits go to the equipment and chemical manufacturers and seed merchants, which is typical for the high input agricultural model (Parrot 2002: 13).

Notwithstanding, conventional agriculturalists simply ignore the alarming loss of (agro-) biodiversity and continue to discourage smallholder peasant farmers from using their own species and farming methods in favour of using hybrid seeds, high performance breeds and other external inputs. Additionally, calls for a new Green Revolution are also increasing again in East Africa.

The Alliance for a Green Revolution in Africa

In 2006, the *Alliance for a Green Revolution in Africa* (AGRA), which is mainly supported through donations from the Bill and Melinda Gates Foundation and the Rockefeller Foundation, announced to invest \$150 million dollars to bring the Green Revolution to Africa. The focus of its projects favours technological solutions for high-input industrial farming methods. These include patented seeds and genetically modified crops which are supposed to withstand the diverse and harsh agricultural pressures of Africa and ultimately raise and stabilize crop yields (Gates Foundation; in Foei 2012). However, it cannot be ignored that most of such plants depend on expensive irrigation systems, fertilizers and pesticides. Even the World Bank stated that many rural communities could hardly afford this capital-intensive approach (Herre 2008: 200). History also teaches us that mostly large landowners benefit from Green Revolutions. They are the ones who can recoup the investment in irrigation, high yielding seeds and machinery. Consequently, land ownership becomes concentrated, whereas multifunctional small-scale agriculture loses ground to large-scale monocrop agriculture resulting in peasants getting displaced and agrobiodiversity almost getting nullified. Trucks distribute the harvests from the big farms to the cities, and the starving are left behind (Bass 2012: 107). In fact, since decades, the industrial agriculture has been in controversy because according to many agriculturists its economic benefits cannot outweigh the social and environmental costs. Regardless of the many successes of agriculture modernization during the last five decades, it is clear that this approach to agriculture, and diets, are economically and socially not sustainable.

If development programs are driven by the Green Revolution - where the practice of growing high-yielding varieties is superseding diversified, small-scale agriculture - the spread of “modern” agriculture will remain the main reason for the dramatic decline of agrobiodiversity (Herre 2008: 200). Ironically, if there is to be a Green Revolution for Africa, it will be necessary to breed improved plant varieties and livestock building on the genetic resources inherent in agricultural biodiversity which would, therefore, still be needed (Frison 2008: 190).

After the *Agricultural Green Revolution Forum 2012* in Arusha (Tanzania), NGOs accused the donors controlling the *Alliance for a Green Revolution in Africa* (AGRA) representing the interests of biotechnology corporations rather than African small farmers in their approach: “AGRA is not in the best interest of Africans, it is a Trojan horse for agribusiness.” (Foei 2012)

As we globally head towards the erosion of our own natural resource base, these current development trends run counter to the increasingly accepted notion of sustainable development (Ringhofer; Singh 2013: 1). Given the lasting structural problems in the sector and the past failure of the Green Revolution, it is certainly worth considering, whether a change in technology is really going to mediate the agricultural problem that is pervasive in Africa. There is the need for a development of an agricultural system with technologies and practices that can be afforded by smallholders and that do not have adverse effects on the environment, on food security and farmers. First and foremost, the goal of the Green Revolution should be to feed the world's population without destroying the agricultural basis. Fertilizers, pesticides, high yielding and genetically modified crops can increase productivity immensely, but it is a misconception that an increase in food production will, by itself, overcome hunger (Bass 2012: 107). The industrial model of agriculture is, apart from the issue of overproduction and the consumption of an excessive amount of resources, not able to satisfy the basic needs of billions of people. Bass (2012: 107), therefore, concludes: “What is needed, is a green renaissance – not harking back to an alleged golden age, but re-interpreting traditional practices in the light of present-day conditions.”

Dissenting votes

IAAST

It is alarming that small-scale farming structures based on more traditional sustainable modes of production are often neglected by scientists and find little support in politics and business. The same kind of contempt is also true for agricultural biodiversity. Today, international agricultural research focuses on wheat and rice, but virtually ignores African plants. To this day, the role the traditional crops is recognised only by a few research institutes (Bass 2012: 108).

In this respect the World Bank launched the International Assessment of Agricultural Knowledge, Science and Technology for Development (IAASTD), an intergovernmental process, under the co-sponsorship of the FAO, GEF, UNDP, UNEP, UNESCO, and WHO that brought together the widest array of stakeholders to evaluate the relevance, quality and effectiveness of agricultural knowledge, science, and technology (AKST), and the effectiveness of public and private sector policies and institutional arrangements. 900 scientists and 110 countries worked for 3 years (2005-2007) in order to release a final report in 2008, called *Agriculture at a crossroads* that covers topics about development and sustainability goals of reducing hunger and poverty, improving nutrition, health and rural livelihoods, and facilitating social and environmental sustainability. Some of the key messages were that the essential factor to combat hunger is not the increase of productivity at any cost, but the availability of food and its means of production on site. In summary, sustainable family farming, agro-ecological production models and strong local markets have been recognized as the best way to feed people and protect the planet. In this report, investment in small-scale production is considered as the most urgent and safest way to combat hunger and to minimize the negative ecological impact of the agriculture (IAASTD 2009: 3-11).

Food Sovereignty

In response to the disappointing approach of the Green Revolution and industrialized agriculture to achieving food security and a sustainable agricultural development, the movement and concept of food sovereignty has emerged from civil society as a powerful counter voice. Food sovereignty combines and embodies best the demands of a sustainable agricultural development based on small-scale farmers and agro-

ecological aspects such as organic farming and agro-biodiversity. Food Sovereignty was coined in 1996 by *La Via Campesina*, the *International Peasant Movement* and its primary objective is to meet the demands for “a resilient food production systems, which provide healthy and safe food for all people, while also preserving biodiversity and natural resources and ensuring animal welfare.” (Nyéléni Declaration, August 2011). In their opinion, this requires ecological models of production as well as a multitude of smallholder farmers and gardeners who produce local food as the backbone of the food system. An important goal is further to ensure the preservation of biodiversity and to recuperate a wide diversity of non-GM varieties of seeds and livestock breeds in the agricultural systems (Nyéléni Declaration, August 2011). Food Sovereignty does not negate trade, but promotes the formulation of trade policies and practices that serve the rights of people in order to have access to food and to safe, healthy and ecologically sustainable production (www.viacampesina.org). In fact, also scholars like Herre (2008: 200), Diao and Thurlow state that approaches that are exclusively technology- and market-based compound the problems, rather than alleviate them. This is due to the fact that export crops such as coffee or cut flowers typically have higher value and growth potential than food crops, but in several countries food staples are more effective at ensuring food security, generating economy growth and reducing national poverty. Furthermore, export agriculture does not generate income from processing agricultural products and makes it difficult for Uganda and Tanzania to develop a labour-intensive manufacturing practice and services because it mainly exports raw materials (Diao and Thurlow 2012: 2). While market-led, neoliberal models suggest that large-scale agriculture is apt for providing food security, advocates of food sovereignty argue that large-scale farming will neither feed populations properly, nor will it generate widespread rural prosperity (Schanbacher 2010: 56).

FOOD SOVEREIGNTY
<p>DEFINITION FROM THE DECLARATION OF NYÉLÉNI 2007: <i>Food sovereignty is the right of peoples to healthy and culturally appropriate food produced through ecologically sound and sustainable methods, and their right to define their own food and agriculture systems. It puts the aspirations and needs of those who produce, distribute and consume food at the heart of food systems and policies.. It defends the interests and inclusion of the next generation. It offers a strategy to resist and dismantle the current corporate trade and food regime, and directions for food, farming, pastoral and fisheries systems determined by local producers and users.</i></p>

Food sovereignty prioritizes local and national economies and markets [...] Food sovereignty promotes transparent trade that guarantees just incomes to all peoples as well as the rights of consumers to control their food and nutrition. It ensures that the rights to use and manage lands, territories, waters, seeds, livestock and biodiversity are in the hands of those of us who produce food. Food sovereignty implies new social relations free of oppression and inequality between men and women, peoples, racial groups, social and economic classes and generations.

Figure 8: Food Sovereignty box

The Food Sovereignty movement is by no means the only organization which campaigns for small-scale, sustainable agricultural systems. Peasants, landless people, indigenous communities and women's organizations have favoured multifunctional small-scale agriculture for decades but advocates of small-scale farming are still often dismissed as romantics (Herre 2008: 200). For many decades, conventional wisdom dictated that small farmers are 'unproductive', 'backward' and typical of 'underdeveloped countries' (Bello 2007).

However, in the past 20 years a variety of articles were published which acknowledge that agrobiodiversity, when part of traditional agriculture, can be best conserved and enhanced through rational use within a broad-based developmental focus on small-scale and low-input production (Johns; Sthapit 2004: 143; Khumalo 2012: 20). It is also known that sustainable farming practices that utilize and conserve biodiversity may ultimately improve environmental quality (Khumalo 2012: 20). Furthermore, there is growing evidence that small-scale farmers have been severely underestimated in their capacity to efficiently supply countries in the Global South with the needed food (Altieri 2009; World Bank 2011: 5; Diao & Thurlow 2012: 2; Herre 2008: 200; Parrot 2002: 44). The intensive home gardens existent in East Africa are well known for ensuring a greater opportunity of survival for many endangered plant and animal species however, their use also appears to be well suited to the need to feed high densities of rural populations (Stocking; Kaihura 2003: 8; World Bank 2011: 5). Although large farms may produce more corn per hectare, the polycultures often found in small-scale agriculture can reduce losses due to weeds, insects and diseases and thus make more efficient use of available resources. By managing fewer resources more intensively, small farmers are able to make more profit per unit of output, and thus, make more total profits (Altieri 2009). Various studies, including those conducted by the UN Conference on Trade and Development in Uganda and Tanzania, confirm that the yields achieved by modern organic farming in the tropics

can be as high as those of conventionally modernised agriculture (UNCTAD In: Bass 2012: 107). Thus, it seems that alternate routes exist to the conventional understanding of agricultural modernization, including the preservation of multifunctional small-scale systems which should also serve as a basis for future innovative approaches (Bass 2012: 108). As climate change particularly impacts agriculture, the ability to adapt is more important than ever. Preserving and increasing diversity is crucial for guaranteeing access to adequate food in changing environmental conditions (Herre 2008: 200). Agricultural biodiversity is thus crucial for sustainably, improving the productivity of agriculture in Africa, and in delivering better health through better nutrition, particularly in the fragile environments where the greatest poverty prevails (Frison 2008: 191). The discrepancy between agricultural development and agrobiodiversity hereby appears to be at least a little repealed.

In the report *Agriculture for Inclusive Growth in Uganda*, even the World Bank (2011: 5) states that “with the adequate support in terms of public goods, small-scale farms can become more productive, showing the same success for inclusive growth as in the Asian emerging economies. This is the good news for Uganda because its significant land constraint and high population pressure make it impossible to rely on large farms in the near future.” Small-scale structures are the best hope of a socially, economically and environmentally sustainable food supply for the growing world population. Therefore, the FAO (2012: 28) has proclaimed that agricultural growth will be most effective in reducing extreme poverty and hunger if it involves smallholders, especially women, when it increases returns to labour and generates employment for the poor.

The modernization and commercialization efforts have failed to protect the rights of local farmers and have generally not contributed to meeting the needs of people in the Global South or to the conservation of agro-biodiversity. In the transition to more sustainable production systems, agricultural biodiversity should play a key role in increasing production efficiency, and in achieving sustainable intensification (He 2010: 14). Modernization efforts are needed to promote a productive and innovative agriculture, however, it is essential that these are orientated towards the needs of the population – that still now consists mainly of small-scale farmers. Samir Amin (2012) emphasizes that it requires macro-policies at the national level to protect peasant food production from the unequal competition of (local and international) modernized

farmers and agribusiness corporations. This will help guarantee the survival of local small-scale food systems and maintain acceptable internal food prices, disconnected from the international market prices (Amin 2012: 332).

It is clear that traditional systems, once lost, are hard to recreate. This fact underlines the imperative for protecting them. There is now a compelling case for advocating conservation that is in tandem with livelihood needs of the people affected (CBDC 2009: 17).

Limits in suitability and validity of World-System theory

In their discourse, Marxist writers, and subsequently also representatives of the World System theory implicitly accept a model of man/woman that is the product of capitalist relations of production. In fact, the only way by which Marx could effectively argue his case of historical materialism was to assume the capacity of capitalism to complete its historical cause: to erase all traces of pre-modern social formations by achieving an accelerated transformation of the means of production (Hydén 1980: 245). Indeed, in all societies that Marx and Engels were able to study, directly or indirectly, the peasantry had already been subordinated to the demands of other social classes. Such was the situation in Europe, Asia and the Americas (ibid. 1980: 244). However, Göran Hydén (1980: 244) argues that the situation in Africa is different. He explains that Sub-Saharan countries (with the obvious exception of South Africa and Zimbabwe-Rhodesia) have unique economies, because rural smallholder producers still largely dominate these. In Sub-Saharan Africa, the means of subsistence are controlled by smallholder peasants rather than by the ruling classes. Hygén (1980: 9) thus sees Africa as the only continent where the peasants have not yet been captured by other social classes. Because of this structural anomaly of a large number of ‘uncaptured peasants’, as Hydén (1980: 244) calls them, they can be analysed only to a limited extent in consideration of Marxist paradigms⁸⁹: “One cannot ignore the problem of an uncaptured peasantry and incorporate it into their scheme of Marxist analysis.”

Since Marx and Engels were primarily concerned with the theoretical analysis of the

⁸⁹ In fact, Africa never made its way into Marx’s writings. Had he been able to extend his studies to Sub-Saharan Africa, the subsequent perception of the peasantry by Marxists may well have been different from what it is today.

capitalist mode of production in order to understand the societies of Europe, the relevance of their theoretical work for the analysis of other modes of production cannot be taken for granted (Hydén 1980: 248f). Nevertheless, for representatives of the World System theory there is little or no room for the notion that any development in the periphery of the world capitalist system is still influenced by a mode of production other than capitalism. It is misleading to conceive the developments as stemming merely from the operations of the capitalist mode. Many Marxist thinkers see land, labour and capital only through the world markets in which they were embedded (Waters 2007: 11). However, as the description of the *economy of affection* exemplifies, there are other laws than those of capitalism that determine the pre-modern peasant mode of production. Peasant societies, therefore, do not lend themselves to an adequate interpretation by analytical models based on the premise of the predominance of capital or any other modernizing agent (Hydén 1980: 4). By ignoring the social logic of the peasant mode, its economy of affection and the social formations to which it gives rise, it is not easy to comprehend the social realities in Africa (ibid. 1980: 249). In the same way as modern man is captured within the walls of the capitalist or socialist mode of production, the rural producer in Africa is a captive of the peasant mode. We must accept that the pre-capitalist social formations in Africa usually have a material base of their own, outside the capitalist mode of production. They are not merely parasitic adjuncts to the latter or mere extensions or satellites of modern societies (ibid. 1980: 249). The point is that in the organic environment of rural Uganda and Tanzania there is no room for the objective laws of historical materialism. To operate, these laws require an inorganic environment, where man/woman can feel mastery of both nature and history (ibid. 1980: 225).

And exactly this difference in environments represents another weak point of the World System approach. Indeed, contact with an international capitalist system of economy is, by economic historians from World System theory and many other Marxist thinkers, regarded as the most central unit of analysis, for defining attributes that are inherent a certain society and environment (Tosh 1980: 83). After all, the peasant is attached to his habitat that – far more than any external incentive or constraint – determines his agricultural activities. The peasant lives in an organic environment and is highly determined by it. He does not yet perceive himself as a master of nature and history as farmers in a scientific-technocratic system probably

can feel. Agricultural production in peasant societies of Uganda and Tanzania is first and foremost conditioned by the natural environment – by soil, by disease and pests, and above all by rainfall. All of these factors are subject to a high degree of variation within tropical Africa (Tosh 1980: 80). It is not suggested that environmental factors should take over the central ground of the economic-historical debate, but they are largely ignored by conventional scientific sources of Marxist thinkers (ibid. 1980: 83). These limits, however, do not only concern the Marxist thinkers. They must be acknowledged and attempts are to be made to conceptualize these societies in new terms. The situation of the peasants should be discussed in the context of their own mode of production, and, therefore, large-scale first-hand observation of local farming systems is needed, instead of assimilating local specific knowledge and modifying it into conventional paradigms as if these were eternally and universally valid (ibid. 1980: 82).

In fact, Marx himself insisted that he was only proposing a guideline to historical research, and was not providing any ‘master-key to history’.

This ‘centrum perspective’ on developments tends to reduce the existent structures, which are key determinants in the socio-economic development of a particular region and society to secondary importance.

Reflections on the fieldwork

In the following chapter I will bring my own experiences into context with literature and in doing so reflect the evolution of the research question and the empirical undertakings in East Africa. I will begin by providing a short introduction to my initial research design and will then address the reasons why I considered it necessary to depart from my original intent. In the subsequent chapter, I will give some very specific examples of my experience and difficulties I was confronted with during the implementation of the quantitative household survey in Bukoba. Consequently, these problems will be discussed with reference to theory and finally the thesis concludes with a pleading for undertaking research more sensitively.

The writing style does not correspond to the usual scientific standards, as it is mainly about reflections that are based on observations and field notes. Therefore, a "narrative" style was chosen to give the reader as unbiased an insight as possible.

Initial research design

This thesis is a stopgap-solution. My original research interest concerned with the household-related factors that influence agrobiodiversity managed by peasants and the quantitative survey in Bukoba (Tanzania) should have been the main research activity on which this work should have based. I wanted to identify the social and economic factors inherent to the households that determinate agricultural biodiversity. To analyse these household-related factors, I planned to make a multiple regression analysis, with the number of plant and animal species found per household (agrobiodiversity) as the dependent variable and various socio-economic factors (education level, age, and sex of household head, household size, wealth-related factors like source of income, land size etc., and access to infrastructure) as independent variables. The independent variables were chosen primarily based on the existing literature. Agrobiodiversity (dependent variable) was investigated in the production survey, whereas the socio-economic factors (independent variables) were mostly included in the household/nutrition survey.

However, during the implementation of the two household surveys in the Bukoba district, we were confronted with various problems (as I will exemplify in the following chapter). Especially with regard to the implementation of the production

survey, we had no experience and I was seriously concerned about the quality of the data we had collected. Since I was aware that the implementation of the survey should not be repeated, I had to choose whether to use the data which, in my opinion, to a large extent did not meet my requirements of science, or to exclude the household survey data, change the research question and write my diploma thesis based mostly on theoretical insights in agrobiodiversity research.

If data are not reliable, dealing with them becomes even more delicate. Especially if one has no experience with quantitative data as I did, it is a hard task to assess where the validity of a statement begins and where it ends. My concerns regarding the data were not about subtleties; the survey-tool did not comply with the enumerators or with the research subject. This, however, was only one of the problems with which we were confronted in the field⁹⁰.

It required a lot of will power to change the whole research concept, since I had already invested time and energy into it. Above all, it seemed to me that conformity with the original research design and methodology is considered a manifestation of scholarly competence. I feared that not carrying out my research as planned would be thus considered a failure. Englert and Dannecker (2014: 236) confirm that changes of a topic or of the methodological approach and the personal or intellectual considerations and reflections that have led to this change often stay unmentioned in scientific documents. Furthermore, they criticize the tendency of field researchers to positively represent field research and interactions. Failure, just as stress, role conflicts, problems in the interaction with the "researched", feelings of discomfort, or conflicts over publications are rarely addressed (Englert; Dannecker 2014: 236). As the discussion of these 'problems' is rarely encountered in scientific publications, I was not comfortable with addressing them.

After all, the research organisation had expectations on me. I could not tell the project leader that I do not consider the data accurate enough for my thesis. To argue this, I had to explain the project leader (that was not with us in the field) that the work carried out by her research team left a lot to be desired. It was not the issue to admit

⁹⁰ The enumerators (of which only a part understood the language of the questionnaire) partly were not able to understand until the end what the questions in the questionnaire were driving at. To blame enumerators is, however, unjust, since the research team in the field had not understood the implementation of certain sets of questions.

However, although there were major problems in both surveys, they cannot be thrown into the same pot; the implementation of the nutrition/household questionnaire went definitely better than the production tool.

that I had not done a good job; it was about loyalty to your fellow researchers that have been in the field with you. After spending weeks with colleagues, where you share almost every minute during leisure and working time together, the relationship goes beyond a pure ‘employment-relationship’. And if, due to a variety of motivations⁹¹, not everyone agrees that the work in the field was not going well enough, you are caught up in an awkward situation. If you criticize the quality of your data you also inevitably criticise the fieldwork of your colleagues. Moreover, if your colleagues decide to use the data for their thesis, you might even discredit their scientific work.

Simply ignoring the defects of the data, however, would be a slap in the face of my university department, which has tried to teach us students a critical approach to science over years. Thus, it was a dilemma with which I was unable to cope.

Finally, I decided to keep the research question and to write about the shortcomings of the methodology, thus justifying why the data should be treated with caution and how the problems in the field influenced in my opinion the quality of the data, but without further going into details. I would use only those household surveys that were carried out by an enumerator, who had, in my opinion, proven to be competent, and to add the data from the household survey of Kiboga (Uganda), in order to still achieve a large enough sample size. Although the household survey in Kiboga was carried out at a time when I had already left East Africa, I was hoping that data collection in Kiboga district would work out better since the research team was less pressed for time and had already learned from the difficulties during the implementation of the survey in Bukoba.

The God of science had other plans

The Data entry was carried out by the research organization in East Africa and it took them months and months, which is why I had to wait much longer than expected to receive my data. After only some data had arrived, the identity-numbers⁹² of the questionnaires were missing. Without the identity-numbers, it would have been hard

⁹¹ There are a variety of understandable reasons, why people do not want to question the methodology and its outcome: either because they carried more responsibility in the implementation that was not as successful, or because they just wanted to do their job and get paid, because they would not rely on the results anyway, or because they had already put a lot of work into the thesis and did not want to go broke.

⁹² The household/nutrition questionnaire and the production questionnaire should have each been marked for the same household by the same identity-number.

if not impossible to connect the independent variables from the household/nutrition survey with the dependent variable of the production survey. At this time I was already very short on time. I finally got the identity-numbers forwarded two weeks later; however, this was the straw that had already broken the camel's back. Although barely a month was left until the submission date of the thesis, I decided to change research question.

It was no longer only the quality of the data about which I was concerned, but also my research design. During the week of participant observation I was just able to understand parts of the structures and processes that determine the actions and reasoning of the rural population in Kiboga, Uganda. However, it was the participant observation (the research activity which I had attached the least importance) that had virtually enlightened me. It constructed the context in which my following experiences would be assessed, and determined the complete perspective on the following research activities. Above all, it is as a result of these efforts that I have become painfully aware of the possibility that my approach might not have been adequate to answer my research question. I became aware of the complexity of the rural societies and the inadequacy of my scientific paradigms to analyse them. What motivates or allows farmers to cultivate a wide variety of species is, socially and economically, such complex matter. After I had again tackled the literature on methods intensively, I finally realized what I had already suspected; the methods (access) I had chosen did not comply with my research question.

Realizing the shortcomings of the original approach

Since my work was a matter of social factors (which household-factors have an influence on agrobiodiversity) rather than natural scientific ones, it was not just about finding objective causal explanations or cause-effect relationships and to verify these (Englert, Dannecker 2014: 9). The focus should not be only on "explaining", but on the 'understanding' too, as it is, according to Weber (1972 In: Englert, Dannecker 2014: 9), a necessary prerequisite for a possible explanation. The goal should be the understanding of (social, political) phenomena and structures in the respective context. Peter Rigby (1976: 24) also underlines the scientific importance of the 'understanding' in his notes on research among the Maasai in Tanzania:

“The social scientist’s full participation both intellectually and emotionally in the day- to-day activities of any community, within the context of its language and culture, is indispensable to any critical understanding of the structures and processes he is trying to elucidate, and ipso facto the foundation of any practice which may derive from such knowledge. Other techniques of data collection, however sophisticated and *scientific* they may sound, merely complement this; without it they may bear no relation to the reality of the community concerned, and would thus have no reality for knowledge or interest in the social sciences.”

I felt a great discrepancy between social realities as defined by my scientific approach and the social reality as actually experienced during my field stay. My understanding of the social reality was not sufficient to define the social and economic variables that would affect agrobiodiversity at household-level. The mechanical gathering of previously defined data before even understanding the social realities was, therefore, not the most suitable approach.

The analysis of social phenomena needs a deep knowledge of those who live and produce them. The focus on group discussions and especially the participant observation were indeed very informative methods, but in my case - being an expatriate researcher - not enough to build up an endogenous knowledge⁹³.

Hydén (1980: 259) puts it in a nutshell: “We cannot presume a defined reality a priori as guide for our understanding of the African development problems because our modes are built on different historical experiences.” Englert and Dannecker (2014: 10) suggest in this regard that at the outset of the research project, the researcher should have more of a vague question and should not know the variables he/she was actually looking for. Social scientists must be willing to enter into a dialogue with the data and then find the further approach toward it. This requires the openness to re-examine the conceptual models, always to reconsider their research methods and to change if required the research question and/or the research design (Englert, Dannecker 2014: 10). In the following chapters, I will underline and reaffirm the validity of these statements for my own field research.

⁹³ Knowledge that originates from within the researched society.

According to my experience in the field, even most native investigators cannot start using quantitative methods until they have made sure that their paradigm and their understanding of the population is sufficient to create an appropriate questionnaire.

Challenges and shortcomings in the empirical work

During the week of ‘participant observation’ at the farming households in Kiboga, Uganda, I noticed that some of the peasants were incapable of answering my questions precisely when it came to numbers. I asked what the minimum and maximum or average temperature in the region was. They had no idea. When I asked how many kilometres it was to the next village or to the school, they could not tell me. Finally, it came to my mind that it is probably because they use other metric measurements, so I asked again for the miles. Either way, they did not really know. I asked how many kilograms of sweet potatoes they would harvest in a year and the percentage of diseased fruit. No chance on getting an answer. An elderly person could not even tell me how old he was. I realized that I embarrassed my families with these questions, so I stopped asking about ages, temperature, kilometres, minutes or kilos. I comforted myself with the thought that the research organisation would return with the two quantitative household questionnaires to the families, and then I would still get my data.

However, a couple of doubts had already arisen. After the participant observation, I could not ignore the feeling that there was something unreal about our assumptions and methods. Our questionnaires consisted to a large extent of questions inquiring measurements like minutes, kilometres, and kilograms. How would this turn out, if the families in Bukoba also had these kinds of difficulties with numbers?

I should have expressed my scepticism, but instead I soothed my doubts by thinking that my researcher colleagues would certainly know what kind of research method is appropriate. These colleagues were all from East Africa, they were had the same skin colour, shared culture and history with these peasants and they would certainly know the peasants’ ‘constitution’ or codex. I, however, am a white researcher from the Global North and I was aware that, as an ‘outsider’, I would certainly face difficulties in understanding which methods are suitable to study a phenomenon in an African rural society. Therefore, I stopped worrying and looked ahead with confidence to the implementation of the household survey.

Our quantitative research intentions in Bukoba district

a) The household/nutrition questionnaire

Two extensive questionnaires had to be carried out with 220 farmer households in Bukoba, Tanzania: the household/nutrition survey and the production survey.

A team of four members was entrusted with the implementation of the questionnaires: the assistant project manager from Uganda, a master student from Kenya, another one from Tanzania, and me⁹⁴. However, it was not up to us to carry out the questionnaires, but the task of about one dozen of so-called ‘enumerators’ – local young people that would go into the field for us with the questionnaire. Our task was mainly to manage and monitor the implementation.

The female project leader, who introduced us to the household/nutrition questionnaire (that would be carried out first), could not come to the field with us. She informed us that the assistant project manager would introduce us to the production questionnaire, once we had completed the former.

After arriving on site, we had to teach the survey to the group of enumerators consisting of older teenagers from the Bukoba district who had no experience with questionnaires. Unfortunately, they also spoke bad English⁹⁵. These were not good prerequisites, since all the questionnaires were in English and we had to explain them the meaning of nearly every single word⁹⁶. We responded quickly and added a few more young people to the group of enumerators who came from a college and understood English better⁹⁷.

After a day of translation and explanation we sent them into the field. Probably, we had not trained them well enough because they came back with questions interpreted all wrongly, with unfilled parts because they simply had not understood the task, and many contradictory answers. Since we did not have enough time to edge in an

⁹⁴ There was also a PHD student from Tanzania and a research assistant from another research organisation, but both joined us only for a few days.

⁹⁵ In the district, they speak Kihaya and at school they learn Kiswahili. English is taught at school at a later stage.

⁹⁶ This is one example that shows how important it is to deal well enough with the history and the current political and social situation of the region or the country in which the research is conducted. Because of its colonial past, Tanzania has a loaded relationship with the English language and there are national efforts to promote Swahili more strongly as the national language.

⁹⁷ Anyway, we could not send the young pupils away because then we would no longer have had enough enumerators and because of the fact that the daughter of the mayor was among them, and he would not have appreciated his daughter being “fired” after just two days. At least I thought that by offering jobs to local pupils for a few weeks, the region could benefit from our research.

additional day of teaching and explaining, the quality of the data we gained did not change substantially in the following days and weeks.

Honestly, I could not even have imagined before, how many things can go wrong. In order to substantiate this, I will take a very illustrative example:

In the questionnaire, we asked for the walking distance to the nearest water source:

How much time does it take you or any other household member to walk to and from the nearest safe water source now (or in the dry season) & approximate distance	1= On your property, 2=<15minutes, 3=30minutes, 4=1hour, 5= >1hour	
	1=<0.1km, 2=0.2-0.5km, 2=0.6-1km, 3= 1.1-2km, 4=2.1-3km, >3km	

Figure 9: Household/nutrition questionnaire box

Just after the questionnaires had already been printed, we noticed that the numeration of the km-distances was wrong⁹⁸ (number “2” appeared twice, hence the rest of the numeration was wrong and number “5” was missing). Therefore, we asked the enumerators to pay attention and to correct the numeration on their questionnaire before they went on the field. Some did what we asked them to do; others seemed not to have understood. In this way, some questionnaires had the numbering up to 6, others just up to 5. As number “2” appeared twice, I had to ask the enumerators, whether they intended number “2= 0.2-0.5km” or “2= 0.6-1km”.

We did not know whether the families were more familiar with kilometres or minutes and, therefore, we asked for both measurements. However, when I corrected the questionnaires, I typically encountered answers like: “3= 30 minutes”, together with “2= 0.2km-0.5km” for one and the same household. I asked the enumerators whether they think it was possible that it takes you 30 minutes to walk 200 to 500 metres. The enumerator had no idea how long it could take a person to walk this distance. The farmer had told him these answers and he just wrote it down.

Anyway, to understand which of the two answers was the correct one (the 30minutes or the 200-500metres), I asked the enumerator to give me the questionnaire of the nearest neighbour of this farmer in order to assess the distance by looking at the data from the neighbour household. However, the questionnaire of the nearest neighbour, who was just living 100m away, displayed data that were totally different: “5=>1hour” & “4=2.1-3km”. How could it be that households exhibited incredible

⁹⁸ Many people in the research organization, including me, had read the questionnaire and commented on it, yet there were quite some surprises.

differences in the distance to the water places, if they live just few feet away from each other?

It was not just about the difficulties of the peasants and enumerators to estimate time or distances; it was probably also because the formulation of the question itself was very unclear (*How much time does it take you or any other household member to walk to and from the nearest safe water source now or in the dry season & approximate distance*). Because of the wording of the question, some enumerators understood that just one way to the water source was meant, whereas others understood that the way there and back was inquired. Some even counted the distance in km for just one way, but the time they needed to fetch water for both ways. Some enumerators asked for the water resource they usually use and others just asked for the distance to the water source in the dry season. It was an exception when time and kilometres matched each other and even then I had doubts whether it was a random stroke of luck.

It was, however, not about the degree of difficulty of the question per se (this should come later); this question could probably have been clarified by explaining to the enumerators what we really intended and that covering one kilometre by foot takes between 12 to 20 minutes of walk.

b) The production questionnaire

After two weeks, we had completed the Household/Nutrition survey only to find out that no one knew how the production questionnaire was to be carried out. It was a very complex questionnaire that consisted of heaps of quantity requirements. We asked the assistant project manager, an agronomist, to explain the questionnaire. However, he said that we three students should discuss it and try to understand it on our own. Mobile phone and Internet reception hardly worked and it was very hard to get in touch with someone outside the field who could introduce us to the questionnaire. I sent a list of questions of aspects that were unclear to us to an American scientist in France, who had helped to compile the questionnaire. I think he was put off by the basic nature of our questions and answered that the assistant project manager should know them very well and answer them.

Finally, it was us three students (two nutritionists and one humanist) that taught the production questionnaire to the enumerators without having had any training on it. There were a number of questions that were not clear to us. To be left to our own

devices was a great challenge. Each one of us interpreted the implementation in a different way and each one of us thought to have found the real solution.⁹⁹ The leadership vacuum created tensions. Ultimately, we could not agree on one way of implementation. The enumerators had to carry the can for our lack of professionalism and unsteadiness. It was very hard for them to carry out the survey, because they received unclear or contradictory information about what they should actually ask the farmers. In order to prevent the worst, I spent the whole day with the enumerators in the field in order to assist them if they did not know how to proceed.

One morning I accompanied an enumerator and we entered a mud hut where a very young farmer was sitting on the ground, which was partially covered with straw. I saw at once that he was intimidated by our presence; he barely looked in our eyes. I was not even sure whether the enumerator had asked the farmer for the permission to conduct the questionnaire¹⁰⁰. Anyway, the peasant's consent to the questionnaire would have just been an expression of existing power relations towards the enumerator and me.¹⁰¹ The fleas in the straw certainly enjoyed our visit more.

The enumerator asked for the peasant's name and told him to write it down. It took the peasant a long time to write the name. When I saw his scribbly writing, I realized that the peasant had to be an illiterate. The enumerator began to ask him questions. He answered very hesitantly and quietly; the enumerator could barely understand him. It seemed that he was scared of our volley of questions. Sometimes the peasant refused to say anything and simply nodded. As we arrived at the questions where we tried to quantify his agriculture, we got no answers at all. The enumerator started to repeat each question several times: "How many KGs of planting material have you used for your maize?" But the repetition of the question did not help the farmer to answer them. He simply did not know. The enumerator also repeated the next question several times: "How many KGs of maize from the last harvest have you already consumed?" We both stared at the farmer who still gave us no answer. Visibly

⁹⁹ Initially, we were still trying to involve the assistant project manager. When I told him my approach for the implementation, he assured me that it was the correct way. However, as my colleague then explained her approach, which was quite different to mine, her interpretation was also considered right.

¹⁰⁰ Originally there was a sheet that should have been part of each copy of the questionnaire that informed the farmers about the aim and purpose of the survey and their right not to participate in the study. But somehow, the sheet was forgotten and was not printed. The enumerators were asked to mention it to the interviewees, but most of which I accompanied to the field, forgot to do that.

¹⁰¹ The research subjects of the Global South often concede an increased authority to the researchers (who usually come from an upper class or even from the Global North). (Englert; Dannecker 2014: 244)

annoyed, the enumerator started to ask the questions very slowly and loudly, as if the peasant was somehow disabled: “How. Many. Banana. Mats. Do. You. Have?” The farmer was certainly not deaf, he was simply intimidated and out of his depth with these kinds of questions.

The enumerator could not hold back his annoyance about the farmer that could not answer the ‘simplest’ questions. I could tell he was a committed enumerator, but nevertheless, his ability to sensitively undertake the survey, was limited.

Maybe it was my presence, which caused the farmer’s discomfort. Not to stress him further with my gaze, I acted as if I was busy with something else. I took out my research diary and started to write, pretending not to notice what was going on.

The farmer was still looking at the floor and not saying a word. After a while, I suggested that the enumerator should ask him if he had more than 80 or less than 80 banana mats. After he had insisted on an answer, the farmer said “less” without looking us in the eye. Then I said: “Okay and now ask him whether it is less than 40 mats?” Then we got no answer again. Our questions were a burden to the farmer.

I advised the enumerator to ask the farmer to show him the fields so he could count the number of bananas mats on his own. But the farmer stated that his main field was far away from the house.

Then the enumerator tried to continue with other questions. For a long time there was complete silence, sometimes a nod, but most of the time just silence. At a certain point the enumerator hit the ground with his clenched fist and made a deep sigh, as his nerves were at breaking point. Visibly irritated, he turned to me, pointed at the farmer and asked what he should do. It seemed to me like a complaint of an adult about the misbehaviour of a child. His look told me: “Look, look how he’s behaving! What should I do with him?”

The situation was becoming unbearable for all of us. At this point, I should have stopped the interview. When empathy, respect, courtesy and patience are lost, the survey can be regarded as a failure. The enumerator was clearly overburdened with the interviewee and I was, again, embarrassed by the behaviour of the enumerator.¹⁰²

The enumerator looked at me helplessly and seemed to be irritated. I would have liked to say "let it be, the questionnaire is too demanding, we haven’t prepared you well

¹⁰² But who am I to tell him how he should behave. I came with him to the field to observe how he was conducting the tool, and to help him. I did not want to become what I always tried to avoid: the white researcher from the North that admonishes her black skinned colleagues.

enough for it.” However, in this way I would have confirmed what the enumerators already knew which is that we do not have any idea how to conduct this survey and that it is therefore not their fault if we do not get sufficient data.

I knew that he would never be able to get valid data from the peasant, but I could not help him. The assistant project leader would not accept giving up this household, and if we gave up this one, how many other households would have to be given up, because the enumerators could not get the answers? Apart from that, the enumerator would not get the full salary for that day if he did not submit the questionnaire. However, if he returned with a partially unfilled questionnaire we would scold him. Eventually, the enumerators could not all return with half-empty questionnaires, just because they encountered ‘some difficulties’ with the peasants. If they filled out the questionnaire with freely invented data, we would not scold them, unless the data was obviously wrong. I did not want to know how he would solve the problem. Unable to cope with the situation I said: “ok I have to leave now, I have to go to the next household, good luck, and thanks”.

Lessons learnt

Time pressure

More time for teaching, more time for common correction of the mistakes and explaining until all the tasks were clear to the enumerators would have been essential to enhance the quality of the data. Usually, we had 10 to 20 minutes in the morning before we started to the households. Rarely anything could have been clarified in this time with the enumerators. Because we did not go through the questionnaires with the individual enumerators, they came back with the same errors day after day¹⁰³. Under the assumption that most of peasants do not measure in litres, kilometres, kilograms and years the same way as we do, it would have been very important to train the enumerators well enough, so that at least they knew how much a litre/kilogram /kilometre is, in order for them to get at least approximately precise data¹⁰⁴. An experienced researcher or enumerator with a good ability in estimating would

¹⁰³ Since I spent much time in the field with the enumerators I always lagged behind with the corrections. It often was until days later that I could speak to the enumerators about the inconsistencies or explain a task when it was obvious that they had not understood it.

¹⁰⁴ But when the farmers told the enumerator that they had eaten this pot full of cooked beans, they could not assess whether it had space for 500g or rather 3kg.

probably have been able to define the various amounts together with the farmers. However, time was short.

Probably even more essential would have been time for reflection and evaluation. The whole team should have sat together day after day to reflect on how it went in the field, what the biggest weaknesses were, and to discuss what the most urgent things were to be changed. At the moment when we realized that the quality of the data had not reached a certain level, we should have been flexible enough to drop all the original plans.

However, we had just three weeks to go through with the whole research activity, and we had no time for reflection, evaluation, further teaching or explaining. In three weeks, elections were to be held in Kenya and since it came to serious riots after the last election, my Kenyan colleague (understandably) wanted to be back in time. Apart from that, I had also booked my return flight.

The assistant project leader wanted to go through the thing now, no matter what the cost. When I told him that some questionnaires are so flawed and contradictory that they are not to be used, he advised us that we should correct what we could correct, because we could not lose any questionnaire. We needed the full amount of them and had no spare time to repeat them. Consequently, we went through the questionnaires together with the enumerator, and they changed, more or less in an arbitrary manner, the data to make it more credible, pretending that they could still remember the right answers and that it was just a slip of the pen why they had written wrong amounts and numbers¹⁰⁵. I have to admit, I was very bad in giving ‘positive feedback’, but it seemed that the assistant project leader did not want to hear any of my complaints about the quality of the data, which was further suffering from this procedure of correcting.

It seemed that nothing could be changed about the procedure. Trying to make the best of the situation, I decided to accompany the enumerators one by one to the field to give them assistance when they needed any help. Therefore, I really became aware of how many difficulties the enumerators had with the questionnaire and how poor the validity of the data actually was. Enumerator and respondent were just hopelessly overburdened with some questions. They often discussed what seemed like an eternity

¹⁰⁵ I was really desperate with the questionnaires I corrected. The 2-year-old child of the Kaimura family, for instance, had just eaten 3,000g of porridge for breakfast. When I confronted the enumerator with the unbelievable amount some days later, he just took the rubber and erased a zero.

to approach a reasonably reliable size, amount or duration. And even then, they misjudged the amount of zeros at the end of the numbers. Initially, I insisted that the enumerators should take their time to get good data; however, after it took us up to 4-5 hours in one single household, I had to recognize that this was either not adequate, since especially female respondents simply did not have enough spare time to spend 5 hours with us sitting on the ground and answering questions. At a certain point, they would begin to tell us anything to fill in the questionnaire, just in order to get rid of us.

Anyway, the enumerators were also interested in conducting the questionnaires as quickly as possible, because we had a very counter-productive policy: if the enumerators were not able to produce at least 4 questionnaires per day, we would not give them the full amount of money. Hence, if someone did just 3 questionnaires, and tried to do them well by taking the time it needed, he got punished by receiving only $\frac{3}{4}$ of the salary that day. We even threatened to dismiss the enumerators if the data would not become any better. Afraid of being dismissed, the enumerators did not want to admit that some parts of the questionnaire were unclear to them. Rather than coming and asking for explanations, the enumerators would simply start to copy the answers of their colleagues.

We were not prepared well enough, and our team was missing a leader who would manage the implementation; time was missing in every regard, and our 'enumerator policies' were not adequate. These factors alone were reason enough why the venture was doomed to failure. However, I still believe that the very crucial reason was that the tool itself was inappropriate. The following chapter will investigate to which reasons this can be attributed.

Problems inherent in our professional means of communication

Some time ago I read the following sentence in a book: "What is displayed in a number always depends on the culture behind it." I can still remember how long I was thinking about this sentence that made no sense to me at the time. Because what is more precise than the objectivity of a number?

Cultural and ethical issues are prominent features in the area of development studies fieldwork, but I could not really understand their importance and decisive force until the experience in the field made me sensible to some of them.

Being carriers of ‘modern’ consciousness, we are good at thinking and speaking in terms of highly abstract models and formalistic categories, to experiment and to emphasize calculable effects (Hydén 1980: 257). Therefore, also the languages of the Global North and, above all, our scientific language tend to objectify the universe, to measure, to capture. This medium is not easily accessible, for instance, to the peasants whose language, by contrast, follows a different logic. Unlike the Western European languages, indigenous languages teach, for example, to pay attention to the adhesive of life that connects everything together (Isaac 2003: 233).

With the mastery of abstract concepts and theoretical models, such as those offered by science, the notion of power is always connected (Ploder 2009). However, the use of our language system and abstract theoretical models make us blind to certain experiences. We are unable to experience certain aspects of living because we are not sensitive and responsive to the same full range of values as other cultures probably are (Isaac 2003: 233). Hydén (1980: 257) claims that “[...] these two languages reflect two different systems of knowledge: one universal, the other particular. Because we are only trained in the former, and it is the only one that lends itself to generalizations, we simply tend to ignore the latter”. The acknowledgement that languages are context specific and consist of certain rules and canons is the precondition in order to conduct good research in a specific environment. Because most of the methodological and methodical approaches have been developed in the Global North, issues of transferability and application in the field of research play an important role. One must provide a framework to respondents, in which they can articulate their knowledge and experiences (Ploder 2009). Our questionnaires, full of measurements that the peasants had to calculate, did not seem to be an appropriate method under our specific circumstances.

This does not mean that quantities and amounts do not matter for the peasant household; but indeed another form of relevancy is paid to them. They are used to measure differently because peasant families in East Africa need to calculate time and amounts not in the same way as we are used to do it. If you are primarily a subsistence farmer, for instance, your eyes will tell you whether you have harvested enough maize for the coming season, not the balance. Why should you know how many KGs of sweet potato you have consumed last month? If you are your own master and employer, you are free to divide the time, and you will not need a watch

(that you probably could not afford). You know anyway how long it takes to fetch water or how long it takes to cook things until they are tender even if you do not calculate it in minutes. Our research subjects in Uganda and Tanzania did not use kilograms, minutes, and miles in their calculations as we do, probably because they have another relevance system regarding measurements in contrast to Western societies.

Before my experience at the peasant's household, I had not expected these problems with measurements and, it can be assumed, neither had my colleagues. At this point, the process of researching can only move forward, if the confrontation with the irritated strangers flows as a productive analysis and modification of the research approach (Ploder 2009). In the field, the meeting must be designed in a way that 'unexpected aspects' have a chance to be expressed and can also be perceived. Discrepancies, contradictions and fractures have to get out into the open, because only in this way we can assess whether our research methods are actually appropriate or not (Ploder 2009).

Hydén (1980: 4; 256f) pleads: "Research must be made an understandable activity in the context of rural Africa. We must accept the limitations of our standard methods of research in a situation where we may be moving on unknown grounds" concluding that "[...] methods must derive from an indigenous experience/knowledge and designed further." We should make sure that our "expectations of conformity" (Stretton 1969: 184) mirror the social realities of the research site. To achieve the latter requires a prolonged exposure to the social living environment where research is undertaken and a willingness to transcend the boundaries of our metropolitan and professional outlook (Hydén 1980: 4).

As we have experienced in Kiboga and Bukoba, also 'local' scientists have been too quick, claiming to understand 'their own rural societies'. Therefore, I challenge what Hugh Stretton (1969: 184) wrote about native scientists:

"If the native investigator of his own society can use many formal, quantitative methods, and talk confidently of causes, this is often because the meanings of action in this society are so familiar to him that he sees no need to begin by *understanding* them. The initial tasks of understanding language and social rules and the meanings of actions become more obviously necessary the less familiar the society to be studies. Thus the study of

deviance at home may look very statistical, while the study of deviance in primitive¹⁰⁶ societies may consist largely to understand those societies' expectations of conformity."

I definitely share Hugh Strettons opinion that more basic understanding is needed, but I do not agree that native investigators are automatically equipped with a deep understanding of the research subjects. It seems that their perception of science was indoctrinated by Western conception. To overcome this bias of 'Northern science' is not an easy thing, not for African scientists and especially not for expatriate researchers.

About being white, black, and foreign and its implications on the generation of an endogenous body of knowledge

It is important to think in advance about issues of power and subjectivity and to reflect the own perspectives about nationality, colour¹⁰⁷ or gender and how this might influence the research results. In doing so, I became aware of the way in which development discourse has been constructed so as to legitimate the voices of Western 'experts' while undermining those of local people (Escobar 1995). Mostly representatives of the post-development and post-structuralism emphasized the aspect that Western scientist dominated the production of knowledge over many decades. This fact is probably one of the main reasons why 50 years of research for development hardly showed great success. Romantically idealized, I came to the conclusion that everything that comes from Africa might, therefore, be better than the research conducted by expatriate researchers from the Global North.

I still believe that local researchers are likely to be in a better position to carry out research for creating an "endogenous body of knowledge" (Hydén 1980: 4), but I also

¹⁰⁶ Although agree with the statement of this citation, I do not agree with this expression.

¹⁰⁷ I suffered under the condition of being a white researcher, because it was evident that I had a privileged position. Stakeholder spoke to me twice in the opinion that I was the project manager. When I told them that it was not me and pointed at my black skinned colleague, they were a little surprised. I did not feel comfortable with this position. In certain situations, I held back my opinion, because I had the impression that overly much weight would have been attached to my notion. I just tried to be sensitive, but I put undoubtedly too much emphasis on skin colour and nationality. But in being an expatriate researcher, an instant visitor of rural African society, and moreover and "undergraduate", I felt justifiably very inexperienced and not in the position to call into question any approach of my African colleagues.

believe that it was excessively romantic to assume that insiders would automatically have a more sophisticated and appropriate approach to researching or understanding social reality in *their* society. An expatriate researcher like me who only stays for a short period of some weeks in Africa, starts from much more difficult premises and will not comprehend many processes and phenomena. This is, nevertheless, not to suggest that the African scientist can approach this task as if the table has already been laid (Hydén 1980: 258). My research colleagues indeed came from wealthy homes or were already alienated by the wealthy environment they inhabited. Because of their privileged background, I realized that they had much more in common with my living conditions than with the peasants from the same region. As Englert and Dannecker (2014: 245) confirm, in relation to the identity as a researcher “being foreign” is not fixed, but expressed differently depending on the context of the research. To my black colleagues, some situations with small farmers were probably just as foreign as they were to me. In addition, from being at least partially foreign to the social realities of the peasants, my African colleagues as well were caught in Western scientific language and paradigms. The science community has to cover a lot of ground towards being more sensitive to the relevance and the validity of academic concepts and theories to local problems in order to generate a more endogenous body of knowledge (Hydén 1980: 253).

I no longer believe that only those who are of a “particular race or ethnic group can study or understand others in a similar situation, or that only those who are women of colour or lesbian can generate antiracist or antihomophobic insights.” (Scheyvens 2000: 121) Sidaway (1992: 406) states that this kind of assumption “is to fall into the fallacy of Third Worldism, and a potentially reactionary relativism.” But I am also against adopting the postmodern position whereby „any viewpoint is valid as another.“ (Scheyvens 2000: 121f) What Hydén (1980: 260) advises should be valid for scientists of all colours and genders: “We are all well-advised to adopt a little of that humility of which the peasants have such a plenty.”

Dealing with stressful situations

Englert and Dannecker (2014: 235) assert that learning by doing should be an accompanying motto for each first field research, but not at the expense of those who are at the centre of research interest. We behaved in a very disdainful way toward the

peasant that could not give us the answers. And that was just one of many unpleasant interactions I experienced.

Our troubles in collecting valid data, but also the confrontation with uncomfortable situations in the field as well as my inappropriate behaviour have been hard to bear for me. I felt that my complaints were not wanted and were not heard and too often I did nothing against it and just I stood idly by. To have an environment that encourages reflection on what is happening in the field would have been essential – not just in order to prevent inappropriate behaviour or to improve our methods of work for the future of our field stay, but also for my own “mental hygiene¹⁰⁸”. I share the opinion of Englert and Dannecker (2014: 235) that the discussion of such burdens should not be seen as a weakness, but as an important part of the reflection on the conditions of the own research because as such they are also important for the process of data analysis.

A plea for a sensitively undertaken field research

Time is precious for everyone and there is a moral responsibility to give something back. It must always be remembered that it is not a matter of course that people sacrifice their leisure time and participate in a research project. Therefore, it should be investigated whether the person gives his/her time voluntarily, or feel obliged to do so (because, for instance, of existing global and local power structures) (Englert; Dannecker 2014: 256f).

If peasants offer their time and their knowledge, they deserve professionalism. Fieldwork is definitely one of those undertakings that you simply cannot be too prepared for (Leslie/Storey 2003: 77). Not mainly to ensure a certain quality of the data, but mostly because you run the risk of treating the researched in a disrespectful and undignified way. In fact, Scheyvens (2000: 119) uses the words of England (1994) to warn us that “Fieldwork might actually expose the researcher to greater risk and might be more intrusive and potentially more exploitative than more traditional methods” and “exploitation and possibly betrayal are endemic to fieldwork.” She further emphasises that academics have not yet adequately explored the power

¹⁰⁸ No exchange via telephone or internet was possible and in fact the absence of any kind of partner with which I could share the frustrating ‘adventures’ weighed on me and made the experiences more difficult to handle.

relations, inequalities and injustices upon which differences between ourselves and those we research is based (Scheyvens 2000: 119). A careful examination of the practical and ethical aspects of field research is, therefore, important and also the basis for successful research (Englert; Dannecker 2014: 234).

It is a very complex issue to sensitively undertake field research. Each researched subject must be perceived as an expert of his or her own living environment. Genuine respect for local people and customs, flexibility in the research design, a sense of humour, and a willingness to share one's own experiences and knowledge with research participants, are all critical (Englert; Dannecker 2014: 259; Scheyvens 2000: 129).

If the researcher does not show respect and deep interest in the lives of the people, and genuinely so, he will not receive the answers with similar enthusiasm.

More participation at all levels of research

Research subjects in the Global South are too often positioned as guinea pigs to be examined in research projects, with little interaction occurring in the opposite position (Scheyvens 2000: 127).

Scientists should develop close relations with the farmers in order to raise the farmer's self-esteem in front of scientists and to generate a more endogenous body of knowledge. We must be able to go beyond the situation where the researcher preforms merely as an exotic stranger and where the people under study may supply information only because of existing power relationships between the researcher and the researched or because they pity the researcher for having come such a long way to visit them (Hydén 1980: 256). The people under study must be placed at the centre of the research at all levels! The involvement of the research subject should at the very latest start with the determination of the approaches and methods. If we had involved the peasants in the development of appropriate methods, we certainly would not have developed questionnaires that were so complex for them and based on such abstract concepts to their reality that they could not give us valid answers. Ploder (2009) states that the silence of the researched – as we experienced it so often in the field – is a consequence of the lack of willingness to listen on the side of the researcher. He further affirms that critical intellectuals have the task “to create spaces” in which the research subjects can be heard. Ploder (2008) highly recommends - as inherent in

postcolonial perspectives - the opening of the researcher for irritation from part of the research subjects and to promote the willingness to change the thinking-categories. If it is possible in the research process to put the traditional categories in question, an enrichment of that discourse can be achieved. The loss of our own privileges is an important element to achieve this. For instance, researchers should more often be willing to lose their privileged role as being only questioner and interpreter (Ploder 2009).

However, currently, especially in the Global South, scientists have not allowed their analysis to be judged by the responses of the people under study. The scientist should try to check as much as possible whether his interpretations appear reasonable to the research subjects. It is without doubt a big challenge to engage the local population in a research endeavour. However, in this way, processes and structures, which we are only able to presume, could become clearer and more than anything else this would provide a chance to test the relationship between “defined” reality and the way it is actually articulated (Hydén 1980: 257). Furthermore, research is almost exclusively evaluated on the basis of criteria internal to the academic community itself.

I consider the fact that I did not involve the farmers more deeply in my research endeavour the opportunity I regret most to have missed. It is, ultimately, this lack of participation and integration of the researched that most likely leads to the failure of the entire project. Pinedo-Velasquez (2003: xix), to name just one of many scientists, ascribes the cycle of short-lived initiatives which characterizes rural development and conservation programmes in most poor countries as the result of this lack of participation. This aspect is as persistent and chronic a feature of the development landscape as the problems of poverty, environmental degradation, and biodiversity loss. It is an important challenge to investigate, how these cycles can be broken in order to achieve lasting change and benefits that incorporate the experiences and results of short term projects. (Pinedo-Vasquez 2003: xix)

Conclusion

The agricultural sector depends on agrobiodiversity for sustainable agricultural production and the proper functioning of the agro-ecosystem. Agrobiodiversity is a form of insurance against socially, economically and ecologically risky environments. This contribution of agricultural biodiversity towards livelihood security among small-scale farmers is increasingly recognized (Bioversity International 2008: 5). Modern, commercial agriculture is one of the greatest threats to agrobiodiversity and therefore holds the key to the conservation of the remaining biodiversity in agroecosystems (Khumano 2012: 19). However, the promotion of modern agricultural practices that campaign for monocropping and the use of a narrow number of highly productive varieties and breeds continue to receive unlimited support in Uganda and Tanzania.

It is more than 100 years since the rural producers in East Africa have become incorporated into a wider economy, to which they are expected to make a regular contribution. However, governments that tried to make agriculture more productive lack effective instruments to influence peasant action, which choose a very selective approach to modernization and commercialization. Moreover, circumstances were not always favourable for small-scale farmers to successfully produce for markets. This is why commercialization and the introduction of cash crops did not eliminate the prevailing agricultural system. Over decades, cash crops have mainly been added to existent native subsistence agriculture rather than by instalment of new plantations. Thus, although peasants produced cash crops, contributed partially to a wider market and hence, are partially incorporated into the capitalist economy, the pre-capitalist social formations survived and with them the peasant mode of production remained in existence, and this prevented the decline of agrobiodiversity. Whether agrobiodiversity and small-scale agriculture continue not to be benefitted by modernization depends on what kind of modernization is sought.

From the experiences in the field I've learned that honest reflection and (self-) critique is absolutely essential during all stages of a research undertaking. The discussion of difficulties faced is especially important for the process of data analysis. Although local researchers are likely to be in a better position to carry out research, the majority of research over the past decades has been conducted by Western scientists and so, Western scientific methods still dominate. This is probably also why

local researchers are caught in a Western scientific language, paradigms and approaches. Hence, issues of transferability and application of methodological approaches in the field of research play an important role. I believe that well considered involvement in the community is a precondition for a successful research undertaking.

Also, the suitability of World System theory and Food Regime approaches was limited due to their derivation from a given abstract research model as opposed to local experience. The theoretical and empirical approaches have in both cases failed to be defined in the light of the reality of the research site. Now that my research is over, I have for the first time the impression that I have created the necessary base to understand and study the structures and processes I tried to elucidate through my research.

Pictures



Figure 10: Smallholder farm in Kiboga, Uganda



Figure 11: Coffee beans, the main cash crop in both districts



Figure 12: Banana plant, the main food crop



Figure 13: A representative example of the diversity of plants grown



Figure 14: Animal diversity



Figure 15: Varieties of maize

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Abstract (English)

Modernization has always combined constructive dimensions with destructive aspects (Amin 1990). This seems especially true for agriculture, where modern farming systems have increased productivity many times over and decreased hunger rates sharply within a few decades. Agrobiodiversity and small-scale farmers in the Global South, however, seem more likely to belong to the ‘losers’ of this process of modernization. For many decades, conventional wisdom dictated that small-scale farmers are ‘unproductive’, ‘conservative’ and typical of ‘underdeveloped countries’. Due to various modernization and commercialization policies, the peasant mode of production has nearly everywhere been overpowered by more ‘effective’ modes. This is alarming since small-scale farmers are recognized to be the custodians of agrobiodiversity. As small-scale farmers are displaced, we are losing the diversity of their traditional species and breeds.

Based on this analysis, this thesis deals with agrobiodiversity and the extent to which it is threatened by the spread of modern, commercial agriculture. My hypothesis was that the type of commercialization and modernization that has been promoted since colonialism through the world economic system exerts a negative influence on small-scale agriculture and is thus endangering agrobiodiversity. The study is mainly based on an exhaustive literature review and empirical observations. Case studies have been conducted in two study sites: in Kiboga district in Uganda and in Bukoba district in Tanzania. For the historical analysis of agricultural development since the colonial period, the World System theory and the Food Regime approach have been chosen.

My research results showed a strong promotion of commercialization of traditional farming systems since the integration of Uganda’s and Tanzania’s agriculture into the world capitalistic market during colonial times. Agricultural “development approaches” privileged commercial monocropping and a narrow number of highly productive varieties and breeds and, especially since the 1980s, also rich large-scale farmers.

However, in Uganda and Tanzania the decrease seems to progress less rapidly than in most other world regions. This seems to be due to the high “survivability” of the peasantry. Agriculture is still carried out by at least 85 per cent by small-scale farmers, whose intensive home gardens are ensuring a greater opportunity of survival

for many endangered plant and animal species.

The main results are that the commercialization of agriculture is not a steadily increasing trend, that commercialization does not go hand in hand with the modernization of agriculture, and that commercialization does not lead to the introduction of large-scale farming and the concomitant loss of agrobiodiversity.

The interesting thing about the East African situation is that despite strenuous efforts by the colonial powers and the independent governments, farmers have retained their traditional small-scale structures to a large extent and thus sustained the variety in species. Plantation agriculture has, therefore, never played anything other than a secondary role in the Ugandan and Tanzanian colonial and post-colonial economies.

If the circumstances were favourable, small-scale farmers produced for the market; at times, they reached high degrees of commercialization, but cash crops were always only added to their traditional crops; they did not replace them.

The research showed that incentives and opportunities to produce exclusively for markets have remained insufficient over many decades and, therefore, smallholder households were never willing and/or able to give up their agricultural systems and hence their variety in species because of their contribution to food and livelihood security.

However, this thesis is not just about factors influencing agrobiodiversity, but also about researching agrobiodiversity per se. Based on the experiences I made through my participation in an international research project and my field stays, I will reflect on shortcomings in the empirical approach and on the adequacy of methodological methods.

Abstract (Deutsch)

Es scheint in der Natur der Modernisierung zu liegen, konstruktive Dimensionen mit destruktiven Aspekten zu kombinieren (Amin 1990). Dies ist eine besonders zutreffende Diagnose für den landwirtschaftlichen Sektor. Durch moderne technologische Errungenschaften, ist es gelungen innerhalb kürzester Zeit die landwirtschaftliche Produktivität um ein Vielfaches zu steigern und dadurch die Hungerrate drastisch zu senken. Dennoch gibt es auch Schattenseiten: Kleinbauern und Agrobiodiversität scheinen unter die Räder dieser Entwicklung zu geraten. Modernisierungs- und Kommerzialisierungsmaßnahmen führten weltweit dazu, dass die kleinbäuerliche Produktionsweise durch „effektivere“ Anbaumethoden ersetzt wurde. Dies ist insofern eine alarmierende Entwicklung, da es sich bei den Kleinbauern um die Hüter der Agrobiodiversität handelt. Ihre traditionelle Arbeitsweise sorgt dafür, dass sowohl Pflanzenarten, als auch Tierrassen verschiedenster Art erhalten bleiben.

Ausgehend von diesem Tatbestand, befasst sich meine Diplomarbeit mit der Agrobiodiversität Ugandas und Tansanias. Es wird der Frage nachgegangen, ob die Art der landwirtschaftlichen Kommerzialisierung und Modernisierung, wie sie seit Kolonialzeiten durch das kapitalistische Weltwirtschaftssystem vorangetrieben wird, einen negativen Einfluss auf die kleinbäuerliche Landwirtschaft ausübt und somit den Erhalt der Agrobiodiversität gefährdet. Zusammenfassend, wurde das Ausmaß der Ausbreitung der modernen, kommerziellen Landwirtschaft und dessen Folgen für die kleinbäuerlichen Strukturen beider Länder untersucht.

Die Fragestellung wird auf der Grundlage der Auswertung von Fachliteratur diskutiert. Empirische Beobachtungen im Zuge meiner Feldforschung ergänzen die untersuchte Theorie. Es wurden zwei Fallstudien durchgeführt, eine im Kiboga Bezirk in Uganda und eine im Bukoba Bezirk in Tansania. Für die historische Analyse der landwirtschaftlichen Entwicklung seit der Kolonialzeit stütze ich mich auf die Weltsystemtheorie und den Food Regime Ansatz.

Es wird deutlich, dass traditionelle Anbausysteme Ugandas und Tansanias seit ihrer Einbindung in das Weltwirtschaftssystem starken Kommerzialisierungsbestrebungen ausgesetzt sind. Landwirtschaftliche „Entwicklungsansätze“ förderten sei es den Anbau kommerzieller Monokulturen, als auch den Einsatz einiger weniger Hochleistungssorten. Der neoliberale Trend hat seit dem Ende der 1980er Jahre dafür

gesorgt, dass vermehrt wohlhabende Großbauern auf Kosten der Kleinbauern begünstigt wurden.

In Folge dieser Entwicklungsstrategien ist auch in Uganda und Tansania eine Abnahme der landwirtschaftlichen Artenvielfalt zu verzeichnen, wobei diese jedoch weniger rasch voranschreitet als in den meisten anderen Weltregionen. Dies ist auf die hohe "Überlebensfähigkeit" der kleinbäuerlichen Landwirtschaft zurückzuführen. Die Landwirtschaft wird immer noch zu 85 Prozent von Kleinbauern betrieben, deren Anbaumethode das Aussterben vieler bedrohter Pflanzen- und Tierarten verhindert.

Folgende sind die wichtigsten Ergebnisse dieser Forschungsarbeit: Die Kommerzialisierung der Landwirtschaft hat keineswegs, wie erwartet, zur Modernisierung derselben geführt. Die Kommerzialisierung folgt nicht einer stetig linear steigenden Tendenz und hat nicht zur Entstehung von großflächigen landwirtschaftlichen Einheiten geführt, wie die gängige These lautet. Des Weiteren ist es besonders hervorzuheben, dass sei es in Uganda, also auch in Tansania, trotz der Bestrebungen seitens der Kolonialmächte und der unabhängigen Regierungen, die Kleinbauern zu einem großen Teil ihre traditionellen artenreichen Kleinstrukturen erhalten haben. Plantagenwirtschaft hat deshalb nie etwas anderes als eine Nebenrolle in der ugandischen und tansanischen kolonialen und postkolonialen Wirtschaft gespielt. Eine wesentliche Erkenntnis meiner Forschung ist außerdem, dass die Einführung von Cash Crops nicht zur Verdrängung traditioneller Sorten und Rassen geführt hat sondern dass diese in den meisten Fällen nur in das ursprüngliche Anbausystem integriert wurden. Darum führt die Kommerzialisierung nicht zwangsläufig zum Verlust der landwirtschaftlichen Artenvielfalt.

Das Überleben der kleinbäuerlichen Familie ist auf die Eigenproduktion angewiesen, weshalb sich eine rein marktorientierte Anbaumethode nicht eignet. Dabei ist hinzuzufügen, dass die Artenvielfalt Hauptmerkmal dieser Subsistenzwirtschaft ist, weil sie für die Ernährungssicherheit ausschlaggebend ist.

Diese Forschungsarbeit beschränkt sich jedoch nicht nur auf die Einflussfaktoren der Agrobiodiversität, sondern analysiert ebenso die Methodologie der Agrobiodiversitätsforschung per se. Anhand der Teilnahme am Forschungsprogramm werde ich auch den empirischen Zugang kritisch reflektieren und auf die praktische Umsetzung der Methoden und ihrer Angemessenheit für dieses spezifische Feld eingehen.

Curriculum Vitae

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Education

since October 2008 Independent diploma course in development studies
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Main emphasis: sustainable development

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Work experience

07/2013 – 09/2013 Research assistant at the Sustainable Europe Research
Intitute (SERI) within the sector Quality of Life and
Integrated Strategies, Vienna, Austria

12/2012 – 02/2013 Research internship at the reseach center Bioversity
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03/2011 – 01/2012 Internship at the international human rights organization
FIAN – FoodFirst Information and Action Network, Vienna,
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03/2012 – 06/2012 Organization of a lecture series about food sovereignty:
*“Ringvorlesung: Ernährungssouveränität – Theorie und
Praxis für ein alternatives Lebensmittel – und Agrarsystem”*
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07/2011 – 09/2011 Internship at the *“Dachverband für Natur- und
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11/2010 – 12/2010 Employee at the international film festival of human rights
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Language Skills

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English	C1 – proficient user
French	B1 – independent user