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Study Project:

Value Chain Development for Food Security and Income Generation in the Context of Climate Change

The Case of Fresh Vegetables in Ethiopia

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Abstract

This study examines smallholder-oriented constraints and opportunities within the vegetable value chain in the Upper Rift Valley in Ethiopia by analyzing its stakeholders, the enabling environment and supporting markets. The four-dimensional perspective focuses on the value chain development for food security and income generation in the context of climate change with a special focus on gender issues. Continuous governmental food aid, insecure livelihoods and decreasing groundwater levels, for instance, show growing importance of these four dimensions in the agricultural sector of the project area. Both an inductive and a deductive research approach are applied to ensure sufficient data for the research project. For the inductive part, a value chain analysis, using semi-structured interviews and non-participatory observations are conducted. The deductive part tries to test the hypotheses about the interlinkages between value chains and the four dimensions by secondary literature analysis and semi-structured expert-interviews.

The results of the study show high interlinkages between the four dimensions and reveals the main challenges in the vegetable value chain. Women highly contribute to the agricultural labor force in the project area, but due to strong traditional gender role models they are not very well represented therein. Female-headed households face high sensibility to climate and market variations. Besides, severe water scarcity due to climate change and inefficient water management as well as lacking irrigation schemes are crucial problems for smallholders. They face unstable yields and income instability because of uncertainties caused by climate variability and price volatility. Regarding technical expertise, there is a huge knowledge gap and lacking access to technology, causing high transaction costs and inefficiencies. Deficient market integration, poor transparency and information asymmetries lead to high dependency on middlemen and a low income. In summary imperfect market conditions of vegetables with a high degree of informalities and the role and power of middlemen, are seen as main challenge of vegetable value chains in the project area. The study recommends to conduct a comprehensive market analysis in order to tackle the four-dimensional challenges identified.

Key words: Value Chain, Vegetables, Food Security, Climate Change, Income, Gender

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Abbreviations

ACDI	Agricultural Cooperative Development International
ADLI	Agricultural Development Led Industrialization
ATA	Agricultural Transformation Agency
BAU	Business as usual
CAADP	Comprehensive African Agricultural Development Program
CGIAR	Consultative Group for International Agricultural Research
CRV	Central Rift Valley
CRGE	Climate Resilient Green Economy
CSA	Central Statistical Agency
CSO	Civil Society Organization
CSR	Corporate Social Responsibility
DA	Development Agent
ECX	Ethiopian Commodity Exchange
EHDA	Ethiopian Horticulture Development Agency
FAO	Food and Agricultural Organization of the United Nations
FCA	Federal Cooperatives Agency
FHH	Female-headed household
FPLF	Tigary People´s Liberation Front
FTC	Farmer Training Center
EPRDF	Ethiopian People's Revolutionary Democratic Front
FDRE	The Federal Democratic Republic of Ethiopia
FYGTP	Five-Year Growth and Transformation Plan
GCC	Global Commodity Chain
GVC	Global Value Chain
GCF	Green Climate Fund
GDP	Gross Domestic Product
GTP	Growth and Transformation Plan
HDI	Human Development Index
ICESCR	International Covenant on Economic, Social and Cultural Rights
ICT	Information and Communication Technology
IFAD	International Fund for Agricultural Development
ILRI	International Livestock Research Institute
ISLA	Initiative for Sustainable Landscapes
LUCC	Land use and land cover change
MCS	Meki Catholic Secretariat
MEF	Ministry of Environment and Forest
MFA	Ministry of Foreign Affairs of FDRE
MHH	Male-headed household
MoA	Ministry of Agriculture
MoARD	Ministry of Agriculture and Rural Development, Federal Democratic Republic of Ethiopia
MoFED	Ministry of Finance and Economic Development
MoWIE	Ministry of Water, Irrigation and Energy

$MtCO_2e$	Megatons of CO_2 equivalent
NBE	National Bank of Ethiopia
NEPAD	African Union's New Partnership for Africa's Development
NMA	National Meteorological Agency
NGO	Non-Governmental Organization
PASDEP	Plan for Accelerated and Sustained Development to End Poverty
PIF	Ethiopia's agricultural sector policy and investment framework
PPP	Public-Private Partnership
SDPRP	Sustainable Development and Poverty Reduction Programme
SSA	Sub-Saharan Africa
TSS	Traditional Support System
TPLF	Eritrean People´s Liberation Front
UDHR	Universal Declaration of Human Rights
UN	United Nations
UNDP	United Nations Development Programme
UNICEF	The United Nations Children's Fund
USAID	United States Agency for International Development
VCA	Value Chain Analysis
VOCA	Volunteers in Overseas Cooperative Assistance

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1 Introduction

1.1 Problem Statement

The sector of fresh vegetable production in Ethiopia is transforming. Over the last decade, the investments in vegetable production have increased and the sector faces growing commercialization. Still, the vegetable sector is less developed than those of coffee and staple crops like maize and teff. The yields of fresh vegetables in Ethiopia also lag behind compared to those in other countries, leaving room for improvement in the sector (EMANA/NEGUSSIE 2011, ETHIOPIAN INVESTMENT AGENCY 2012).

Although vegetable production represents only a small part of the total agricultural production (around two per cent), its importance should not be underestimated (ETHIOPIAN INVESTMENT AGENCY 2012). Vegetables are high-value crops that provide opportunities for increasing farmers´ income. The export market for vegetables produced in Ethiopia is growing fast. Commercialized farms are providers of new job opportunities. At the same time, increasing investments might be a threat for Ethiopia's numerous smallholder farmers that make up the majority of the country's population (FERNANDEZ-STARK et al. 2011, THE OAKLAND INSTITUTE 2011).

Vegetable production also plays an important role concerning food security. Ethiopia has a history of recurring famines, but nowadays, the country is able to cope much better with the consequences of droughts, for instance. Therefore not only calorie intake, but also the diversity of food becomes more important for addressing food security and vegetables are an important contributor to a nutritious diet for the Ethiopian population (FAO 2009, VAN DEN BERG 2011). Climate and the environment are crucial determinants for the success of vegetable production. Although the local climate is very suitable for the production of many vegetables, Ethiopia is also a country influenced by unpredictable weather and high spatial and temporal variability of rainfall and temperature. Several droughts in the last few decades increased the importance of irrigation in vegetable production (VAN DEN BERG 2011). Despite fertile soils, agricultural production levels in Ethiopia are generally low. Ethiopia's yield gap can be attributed to low-technology production systems, as well as inadequate management (ETHIOPIAN INVESTMENT AGENCY 2012).

Concerning the improvement of vegetable value chains, it is not enough to just focus on increasing technology at the production side. All segments of the value chain should be addressed, because the value captured is often unevenly distributed among the different value chain actors. One example is that even though producers manage to improve their

production, bottlenecks at higher segments in the value chain might impede farmers to capture a higher price (FERNANDEZ-STARK et al. 2011).

The development of vegetable production might be hindered by structural inefficiencies, such as embedded gender roles in the culture as well as the institutional environment in the country. Feminist scholars, such as for example DUNAWAY (2014) and BARRIENTOS (2014), criticize 'mainstream' value chain and commodity chain research for ignoring the role of gender in food production, despite women often doing the major part of the work involved in agricultural production. In Ethiopia gender roles are still very traditional and inequalities are still high, the role of gender in the vegetable value chain is therefore relevant for further investigation (AREGU et al. 2011, THE OAKLAND INSTITUTE 2011).

1.2 ValueSeC and Teaching Ecofair

This research report is one of the outputs of a study project for master students at the Humboldt University in Berlin. The study project is part of the master curriculums offered at the Humboldt University and its aim is for students to independently carry out a research project in a team. It is organized by the ValueSec project, initiated by the Department of Horticultural Economics at the Humboldt University and received funding from the Heinrich-Böll Stiftung in the context of their Teaching Ecofair Trade project. The following paragraphs will explain more about how this study project contributes to these projects.

The ValueSeC project is an EU-project in the context of EDULINK II that focusses on supporting Higher Education Institutes (HEI's) in developing countries. ValueSec cooperates with HEI's in Kenya and Ethiopia in the knowledge areas of agriculture and food security. The overall goal of ValueSeC is capacity building of HEI's in East-Africa regarding the issues of value chain development, adaptation to climate change and improving food security in this region. Besides this, the project aims at strengthening long-term cooperation between the East-African HEI's and the Humboldt University in Berlin (VALUESEC 2015).

ValueSec co-financed this study project in collaboration with the Heinrich-Böll Foundation in the context of the Ecofair Trade project. 'Teaching Ecofair Trade' is an EU-project that in co-operation with European universities develops experience-based and multi-level teaching modules that integrate the right to food as a central concept. The project specifically focuses on study programs related to agriculture and agricultural trade (ECOFAIR TRADE 2015).

Both projects found each other in their focus on food security in agricultural trade and value chains, as well as on their teaching objectives. This study project is developed based on problem-based learning and incorporated a field work excursion to the Rift Valley in Ethiopia, where staff and students from Berlin collaborated with the partner universities from Ethiopia and Kenya. The study project aims at the students learning to conduct their own research project, based on stakeholder-based value chain development. Students had to develop objectives and research questions independently, with a participatory and interdisciplinary approach. The research project of the students will have special attention for cross-cutting themes in the value chain, in this case climate change, food security, gender and income generation. The excursion to Ethiopia will contribute to the knowledge of students and staff on the country-specific natural, socio-economic and political circumstances of the vegetable value chain.

1.3 Objectives, main research questions and scope of the study

This research report has several objectives. The first one is to map and analyze the value chain of fresh vegetables in Ethiopia. The second is to identify constraints and opportunities for the different stakeholders in the value chain. The supporting markets and the enabling environment are examined as well. Third, with this analysis we further aim at contributing to understanding the linkages between the fresh vegetables value chain and the dimensions climate change, income generation, food security and gender in Ethiopia. Though semi-commercial farmers and export-oriented commercial farmers play an increasingly important role, the focus of the study project is on smallholder farmers that produce for local and regional markets. Because of the multidimensional character of this research, we structured our report on the basis of multiple research questions.

The main research question of our report is:

- *What are the constraints and opportunities for developing the vegetable value chain in the Rift Valley in Ethiopia?*

The general research questions regarding the dimensions of our report are:

- *How does climate change affect the value chain of fresh vegetables?*
- *How does vegetable production affect smallholder's income situation?*
- *How can development of the vegetable value chain contribute to food security?*
- *Which gender-related constraints exist in the vegetable value chain?*

The Rift Valley in Ethiopia is an area very favorable for vegetable production and where commercial investments have increased. Therefore, this region is suitable for the field work for the study project, also because the partnership with Haramaya University in Ethiopia made it possible to successfully implement the field work. We conducted our research in the area surrounding Meki and Ziway, where we observed and interviewed several stakeholders in the vegetable value chain. In addition to that, some interviews also took place in Ethiopia's capital Addis Ababa, in order to obtain information on the enabling environment and the end market.

Figure 1 Overview Ethiopia including focus area (own illustration)

1.4 Outline

This report is structured as follows. In chapter (2) we will explain the methodology used in this report, both for answering our research question stated above, and for the study project as a method used to reach the objectives of the ValueSec and teaching Ecofair trade. Next, in chapter (3) we discuss the concepts of gender, climate change, income generation and food security, as well as their relevance for value chain analysis. We will explore the connections and interlinkages between the concepts and the vegetable value chain, which results in hypotheses on how these concepts influence the value chain and vice versa. Chapter (4) will present our results. The chapter starts with a literature review about Ethiopia and the Rift Valley in particular. This review includes the natural

environment, as well as socio-economic and institutional information about the country. This provides the basic knowledge about the research area to verify the hypotheses from chapter (3), which will be presented afterwards. In chapter (5) we discuss our research question, methodology and results, followed by a critical appraisal of the study project in chapter (6). Chapter (7) concludes.

2 Methodology

2.1 Study Project as a Method

In the following chapter the interdisciplinary and intercultural working methods the group applied during the study project are described with a special focus on the process of teamwork and capacity building.

Methods on Teamwork

Since the study project aims to be an interdisciplinary approach of teamwork consisting of twelve students from Humboldt-University Berlin (Germany) and ten students from Haramaya University (Ethiopia), methods concerning fruitful teamwork and conflict management with special regard to intercultural aspects were key skills for the success of the project. Even within the national teams, the aspect of interdisciplinarity was realized by the participation of students from different master programs as well as different educational backgrounds. During the first weeks, in the orientation phase, several methods such as 'Problem-Based Learning' and 'Conflict-Management' were introduced and discussed by the students (see info box 1). Apart from those concepts, the group participated in a three-days seminar on 'Management of Work Teams', which followed a method named 'discovery learning'. The basic idea is that social learning is far more successful if it is based on each participant's own experience (within a team) instead of experiences made and reported by others (AENIS 2015).

Info Box 1: Problem-Based Learning/ Conflict Management:
Making use of the innovative teaching approach problem-based learning and cooperative learning, the group work carried out is based on principles of student-centered and experiential learning, as well as an inductive process of problem-solving, that builds on prior learning and knowledge applied on context-specific "real life" examples. Hence, this process of solving a complex and ambiguous problem requires metacognition, creates cognitive conflict and supports collaborative and interdependent group work.

Content-related methods

To approach the content on vegetable value chains to the highest extent possible, the group collected and applied various methods. Depending on the task that had to be solved, the application of different methods was conducted, e.g. presentations in class meta-cards, expert rounds (see info box no. 2), buzz rounds/ discussion groups, flashlight rounds,

handouts etc. Making use of this pool of methods we collected information over several weeks, establishing a fundamental basis of our understanding of rural development, poverty prevention and socio-economic security with special focus on Ethiopia. All information was used to design our conceptual framework, which is going to be presented in part 3. In order to guarantee a fruitful group work and a successful value chain analysis we subdivided the team into four concept groups demonstrating the four cross-cutting dimensions identified (see chapter 3.1), i.e. gender, climate change, income generation and food security.

Organization

For organizing teamwork, information distribution and documentation the study group used different tools and platforms. In order to facilitate communication issues we used the online platform Wiggio (www.wiggio.com). Moreover, with regard to the interdisciplinary approach this platform aimed to enhance communication and document transfer with the Ethiopian team. To ensure that none of the presented and discussed information was lost, one student always recorded the plenary sessions. Apart from this role of the Minute-taker, there were also some other important roles designed for each meeting: Moderator, Visualizer, Time Keeper and Presenter that were assigned after a rotation system. The rotation system specified who takes over which role for each plenary session beforehand to save time and be more efficient. Besides, in order to assure appropriate citation uniformity, we make use of the online citation manager Mendeley (www.mendeley.com). With the aid of a beforehand-developed topic-specific action plan, the group work could be carried out in a problem-based and results-oriented efficient manner.

Info Box 2: Overview on Presentations and Expert rounds

Short presentations conducted during the course for a first insight on the theme:

1. On Ethiopia:
   - Climate, Environment & Geology
   - Culture, History & Religion
   - The Political System & Policies
   - Legal & Institutional Background
   - Economics & Income Generation
   - Labor markets & Infrastructure
   - Agriculture & horticulture
   - Social issues, Gender, Education & Demography

2. On Concepts:
   - The Value Chain Concept
   - Food Security and Right to Food

3. Expert rounds on:
   - Foreign Direct Investment
   - Value Chain Analysis
   - Commodity Exchange
   - Smallholder-oriented Political Background
   - Climate Change
   - Extension and Institutions
   - Gender and Women's Role in Vegetable Production

2.2 Empirical Field Work Methods

In order to collect all relevant data and permeate the research topic thoroughly a mix of methods was used. As the study project follows both an inductive and a deductive research approach at the same time, only a mix of appropriate methods could ensure satisfying data collection. For the inductive part, an analysis of the value chain of fresh vegetables in the Rift Valley (Ethiopia), semi-structured interviews and non-participatory observations were conducted to get an insight on the topic. The deductive part of this study project tries to falsify the hypotheses drawn by the focal topic groups on the interlinkages between the value chain and gender issues, climate change, income generation and food security (see part 3.2 to 3.5) with a method mix of secondary literature analysis and semi-structured interviews.

In a fieldwork situation interviews are designed to improve the in-depth knowledge on the topic researched. There are different types of interviews that serve different research designs. Generally three broad categories are distinguished: structured interviews (e.g. standardized open ended, closed quantitative), semi-structured (e.g. informal conversational interviews) and fully open interviews (MIKKELSEN 1995).

For the purpose of this study project the semi-structured interview seemed the most appropriate approach as it combines the possibility of theory construction (value chain analysis) and the verification of hypotheses at the same time (cf. WENGRAF 2006, WESSEL 1996). In contrast to more structured (and often quantitative) approaches, questions in a semi-structured interview are open enough to allow spontaneous, subsequent questions by the interviewer. To do so, only some questions are predetermined and many questions will be formulated during the interview (irrelevant questions can be dropped) (MIKKELSEN 1995). This fosters a more fluent conversation and allows to gain more in-depth knowledge on the research topic. To structure the conversation, thematic blocks of questions are outlined within a guideline. Those thematic blocks can be altered, and also questions within the blocks do not have fixed spots but should be adapted to the situation of the conversation. For reasons of comparability all topic blocks should be covered in every interview (cf. MIKKELSEN 1995, WESSEL 1996). In this context, a questionnaire was developed as part of the preparation for the fieldwork in Ethiopia. It consists of general questions as well as particular questions regarding gender, climate change, income generation and food security for each group of stakeholder (see Appendix 1: Questionnaire).

Within the method of interviewing DIEKMANN (2009) distinguishes three main types of errors that can occur and thus have to be taken into account as they can distort results significantly. First, respondent-based errors that include social desirability effects (especially with delicate questions), response sets (more problematic within quantitative surveys) or sponsorship effects (interviewee complies with what he/she thinks is the aim of the research). Second are question-based errors, which concerns especially the formulation of the questions (e.g. implicative questioning, different understanding of words). Third are context-based errors which include characteristics of the interviewer (clothing, wording, color of skin, gender etc.), the place of the interview or third persons attending (e.g. family members, translators, extension agents). All these possible sources of errors need to be kept in mind while conducting an interview but also when analyzing the results (DIEKMANN 2009).

As for this study project, semi-structured interviews are often carried out along other explorative techniques e.g. observations (MIKKELSEN 1995).

Observation as a research method has a long tradition. In the case of deductive research it needs to be structured to withstand the criteria of good scientific work (WESSEL 1996). For inductive/explorative research questions on the other hand also unstructured observations can proof to be useful and scientific, if cross-validated with other methods (e.g. interviews) (DIEKMANN 2009). The method of observations can be used to find out about social relations their structure, procedures and importance as well as human-environmental interaction (e.g. predominant land use structures or agricultural practices) (WESSEL 1996).

Usually observation aim at actions, verbal comments, nonverbal reactions and social/cultural characteristics such as clothes, jewelry or living conditions. In general two types of observations are differentiated: participatory observation, where the researcher takes part in the actions/living situation observed to get more insight and non-participatory observations where the researcher is not taking an active part, but rather stays in the background to not interfere with any situation. The latter is only recommended in a method mix as it cannot give in-depth knowledge on a topic but rather lead to false interpretation, due to unfamiliar cultural/social contexts or selective cognition, when not cross-validated with a more thorough empirical method (DIEKMANN 2009). Observations made, can later be quantified by counting or mapping and serve in that way as a descriptive output of the situation (WESSEL 1996).

During the fieldwork period (26/08/-10/09/2015) we conducted several semi-structured interviews with different actors of the fresh vegetable value chain (further details in chapter 4.2.1).
To record the interviews and observation within the study project transcripts were written down during all interviews by several participants simultaneously. Transcripts were synchronized subsequent to the each interview session. More than half of the interviews were also recorded with a voice recorder. The audio files were transcribed and synchronized as well with written down notes of the participants. The advantage of audio recording has been that questioning flow was not interrupted. Furthermore it gave the possibility to re-listen critical parts. In that way selective perception of important/non-important facts can be minimized (cf. WESSEL 1996).

As MIKKELSEN (1995) states, there are no strict formulas to analyze qualitative data from semi-structured interviews. As data-collection and analysis go hand-in-hand, they improve each other "on-the-fly" (MIKKELSEN 1995). Still there are of course methods to analyze the data gathered by semi-structured interviews and observations. A good way to do so is by analyzing the data according to purpose (in the case of the study project by focal groups), and find patterns to develop category system. Special emphasize should be put on the recognition of processes and linkages within the data to gain knowledge on causes, consequences and relations (PATTON 1990 after MIKKELSEN 1995). It has to be said though, that there are no straightforward tests for reliability and validity of the information gained through semi-structured interviews (as has been mentioned above, answers can be biased in different ways, for more on that topic see also part 2.3) (MIKKELSEN 1995).

2.3 Critical Reflections on Empirical Field Work Methods

As mentioned already shortly in part 2.2, methods used in the field work are not free of biases, which can lead to severe problems in data collection or interpretation of the data. Production of knowledge, which is envisaged by using empirical methods in the field, can never be objective. As knowledge is the result of mutually immanent social relations between researchers and researched, it is highly contingent, contextual, experiential and relational as CARETTA (2014) states. Interviews conducted are never asocial or ahistorical, the interviewer never leaves behind his/her anxieties, hopes, fears, prejudice, specific interests, class, gender, age, personal situation, occupation and location in global society

(cf. MOLLINGA 2008, WENGRAF 2006). This has to be taken into account when going into the field and applying empirical methods. The research process should be examined by looking inward (Self-reflection) and outward (reflecting on relations with others involved). This is one basic way to subvert the power-loaded relationship between researchers and researched (CARETTA 2014). Implementing a methodological approach in the field is always a process of negotiation of the setting that includes societal conditions (hindering and/or enabling ones), ethical principles, political standpoints, cultural gaps and communication boundaries (MOLLINGA 2008). These negotiations can be a lot more complex when working in cross-cultural and cross-language contexts. Especially when trying to research on concepts who want to capture complex situations and objectives (e.g. sustainability or human development) transaction costs in cross-cultural and cross-language contexts can be very high (MOLLINGA 2008). Therefore it is very important, that the researcher makes him-/herself familiar with the local context through a thorough desk study prior to conduct field work. This includes the historic context (in SSA especially colonial and postcolonial experiences), social norms and rules, and structures of society. Of course on-the-ground implication of the local context is hard to assess only through a desk study, but it gives a good overview and helps to establish self-reflexivity within the research (MANDEL 2003).

MOLLINGA (2008) identifies four main issues concerned with working in cross-cultural and cross-language contexts which need to be negotiated constantly in the process of research: Cultural differences, methodological style and level of research, communication and interaction on collaborative research and political and ethical legitimacy of research. Cultural differences are the best known and most observed boundary in cross-cultural research field work. Aspects connected to this issue are the ability to speak the language of the informants, learning local terminology in order to explain concepts and ideas, adapt personal behavior local customs and norms and the identity and personality of the researcher. These aspects shape the research at multiple levels of interpretation and turn the "simple" task of conducting a survey into a complex intersection of broader structure and processes.

A common way of overcoming these research barriers is the cooperation with a professional interviewer/researcher/research assistant from within the community (MOLLINGA 2008). This person should in theory minimize the cultural biases, as he/she should act as a "cultural broker" navigating the process of research. Finding adequate personnel can be a tricky task, when working in small and/or remotely located

communities. (cf. MOLLINGA 2008, TEMPLE 2002). The obstacles and complications when working with research assistants and translators will be discussed in more depth later in this chapter.

The issue of methodological style and level of research has already been discussed in chapter 2.2 to some degree. In addition to the task of finding an adequate method or method mix, interdisciplinary research questions may also require to integrate different methods or weight their importance if integration is not possible. This means also to identify the main objective and result of the research (MOLLINGA 2008). Issues of scale may also arise in combination with the discussion on qualitative or quantitative research approaches.

For the issue of communication and interaction on collaborative research MOLLINGA (2008) points out, that large project often have high transaction costs as they are covering a broad variety of topics. One option to minimize those transaction costs is to divide the project into work packages that are then handled by specialized parts of the research team. In the end the parts are then joined together. This approach can lead to more work in editing and integrating the different parts (MOLLINGA 2008).

The fourth issue addressed by MOLLINGA (2008) is that of political and ethical legitimacy of research. In most cases research touches on state policy at some point. This topic is not neutral and of special delicacy in an authoritarian context. The context of research can be corrupted by an atmosphere of distrust and secrecy, especially when employees of state institutions or other third party members are attending the interview sessions. This is a particular complicated situation, which can lead to protectionist subjectivity with the informants as they want to shield themselves from danger and are giving the answers they believing the threatening institutions want to hear or leaving out negative aspects. In order to protect the project and primarily the informants, and local project partners, sometimes researchers need to consider even self-censorship (MOLLINGA 2008).

In most cross-cultural and cross-language research projects interpreters or translators are invited to participate in the project. They are gatekeepers for the researcher in the way that they can communicate in the language of the participants and the researcher, and also now about customs, social circumstances and etiquette when conducting interviews. Furthermore they can act as figures of authority to enable contact to specific target groups and they have the relations and networks to negotiate research related topics with the community (MANDEL 2003). TEMPLE describes interpreters and translators as “cultural brokers” between the researcher and the researched. They have the difficult task to switch

between the two worlds to make them understand each other (TEMPLE 2002). Still translators and the implication of introducing them into a research project is often not part of the methodological discussion although it has significant impact on the way collected data should be handled. The process of translation is a crucial bottleneck as all information goes through the filter of the translator. In the final written reports though all information is in English (or the language of the researcher) and there is no visible sign of the translator nor can one follow the way from the spoken word to the written (TEMPLE 2002). As TEMPLE describes it:

"Due to translation possible differences in meanings or words or concepts across languages vanish into the space between spoken otherness and written sameness" (TEMPLE 2002: 844).

This neglect and lack of acknowledgement of the work of translators and interpreters in cross-cultural and cross-language research not only conceals the amount of work done by them but also makes researchers blind for the possible problems and issues connected to the work of translator. The participants' knowledge is mediated by the interpreter and in a way pre-processed in the translation process before it reaches the researcher. The process of translation as well as the process of knowledge production through research is never value free. In the same way the personality of the researcher influences the interview, the personality of the interpreter does, which leads to situated knowledge (CARETTA 2014). TEMPLE and EDWARDS use the term of "triple subjectivity" in cross-cultural and cross-language research in the field: the researcher, the translator/interpreter and the researched. Within these three subjects, subjectivities are multiple, and their relation between each other is represented on multiple axes of intersectionality (gender, cultural background, economic status, education etc.) (TEMPLE/EDWARDS 2002 after CARETTA 2014).

To minimize the impact of these multiple issues connected to the cooperation with a translator/interpreter (at least partly), it is very important to establish a certain amount of trust. This starts with selecting a research assistant that ideally can speak the local language as well as the language of the researcher and has at least a basic knowledge of the topic researched upon and the methods used. In many cases this is certainly hard to achieve but a careful and thorough selection process can help a lot in achieving the envisioned research goals and obtain the necessary data. It can be also very helpful to integrate the research assistant in methodological discussion and take valuable input

concerning how to ask specific information. Researcher and interpreter should go through the interview guideline/questions together to find possible traps and inadequate formulations or questions, which then can be reformulated jointly. Important concepts should also be discussed together to have a common understanding on them (cf. KOBAYASHI 1994, MANDEL 2003, TEMPLE 2002).

Finally a few words should also be shed about the fact, that fieldwork is an exhausting task for everyone involved the researcher, the research assistant as well as the researched. This needs to be taken into consideration for time planning any field work activity. The researcher needs to take care of himself/herself as well as everyone involved in the process to not exhaust their powers and give them time to recover. If this is not done "research fatigue" can have a great impact on the results obtained. This can than lead to lower results as research fatigue itself leads to irritability, lack of patience inflexibility, nervousness and short temper. Also self-reflexivity is a lot harder to achieve if exhausted from the daily field work (MANDEL 2003).

This chapter gave a general overview on the critical reflection on fieldwork methodology on cross-cultural and cross-language research projects. In chapter 6 we want to use this theoretical background to reflect on our study project and the problems encountered during the fieldwork phase as we feel, this reflection is an important part of any cross-cultural/-language project and needs to be discussed openly to make results and obstacles encountered more understandable.

3 Conceptual Framework

This section introduces the theoretical background we used to study the value chain development for food security and income generation in the context of climate change in our case of fresh vegetable in the Northern Rift Valley of Ethiopia. First, the general value chain concept will be described. Then, the analysis is subdivided into four concept groups that are gender, climate change, income generation and food security. For each concept group, hypotheses are proposed and then the interlinkages between the concepts are shown.

3.1 Value Chain Concept

In the following paper we want to focus on fresh vegetable value chains in Ethiopia. Beforehand it is necessary to define the concept we use when we talk about "*value chains*" and to explain what the analysis of value chains contains.

During the last 20 years many different terms with similar or deviating meaning appeared for analyzing the vertical integration or disintegration to grasp production and distribution processes (STAMM 2004). In the Anglophonic literature we find approaches called: "Filliere Approach, (Global) Commodity Chains (GCC) or (Global) Value Chains (GVC)" (KAPLINSKY/MORRIS 2001, p. 6ff). Further the present paper works with the definition of the value chain, since it is the "the most inclusive of the full range of possible chain activities and end products" (GEREFFI et al 2001, p.3). It emerged from the GCC-Concept and was adapted over many years from Economists and Chain-Researchers as GERI GEREFFI (GEREFFI et al 2001).

Therefore, a value chain "describes the full range of activities which are required to bring a product or service from conception, through the different phases of production (involving a combination of physical transformation and the input of various producer services), delivery to final consumers, and final disposal after use." (KAPLINSKY et al 2002, p.2). Although the idea of a chain implies a linear process, value chains nowadays are rather a complex network and need to be analyzed in the full dimension of their vertical and horizontal linkages (STAMM 2004). Depending on the aim and the research questions we can examine a value chain from a more or less complex angle - at the same time a value chain analysis can be applied on different scopes (on regional, national or even global scopes) (BOLWIG et al 2008).

As the world economy is increasingly arranged around global value chains, countries and firms try to get involved and compete. To get a share on the production processes of the

value chain, means an important opportunity, especially for low-income countries. The participation in a GVC can be a vital condition for their development (GEREFFI/FERNANDEZ-STARK 2011). But also on national level, the spatial and temporal dimension is changing rapidly, so that it is opaque for actors to perceive the whole range of participation possibilities. An analysis of the chain can help to reveal threats or chances for the livelihoods of the different actors along the chain.

Even when the value chain is just a simplification of the real world, we need to look at certain dimensions to comprehend the processes as holistically as possible. GARY GEREFFI proposes an analysis of four different dimensions (GEREFFI/FERNANDEZ-STARK 2011, p. 4ff):

1. The input – output structure, which indicates the flow and the transformation of the product or service, from the raw material into the final product;
2. The geographical dimension;
3. The governance structure, which explains how the value chain is controlled and which power asymmetries are present;
4. The enabling environment, which includes all the institutions, policies and even natural factors that enable the value chain.

As a fifth dimension we included the supporting markets that we want to analyze as well, since they supplement the value chain and the enabling environment for a broader understanding (USAID 2007).

The first step of the analysis considers the vertical integration, which means how the different actors (e.g. farmer, transporter, retailer, wholesaler and consumer) are linked by the product flow. At the same time a horizontal integration must be assumed and examined, since farmers or retailers can cooperate as well at the same stage of the value chain. The second layer of analysis focuses on the geographical dimension, which must be considered and included during the whole study and for all actors of the chain (GEREFFI/FERNANDEZ-STARK 2011). The consideration of certain governance structures helps us to understand how the chain is controlled and coordinated and by whom. Therefore, it gives indications, how actors or firms could enter the chain and which further chances for development or "upgrading" of the value chain exist (GEREFFI/FERNANDEZ-STARK 2011). Upgrading means a process, where the stakeholders maintain or improve their position in the chain or their benefit (GEREFFI/FERNANDEZ-STARK 2011). GEREFFI divides the possible governance types into five different ideal structures: markets,

modular, relational, captive, and hierarchy (GEREFFI/FERNANDEZ-STARK 2011). To grasp the whole extent of the governance structure, the geographical scope and the inputs and outputs, it is necessary to consider the enabling environment and the supporting markets. This means in a first step to identify all the local, national and international conditions and policies of the enabling environment that shape the value chain on the social, economic and institutional level (GEREFFI/FERNANDEZ-STARK 2011). The supporting markets refer to "how markets for financial, sector specific and non-sector specific services/ products function and how this affects the ability of all firms in the value chain to access required inputs, capital, know-how, and skill sets" (USAID 2007).

The idea of a value chain analysis in regard to the possibility of upgrading, the enabling environment, the supporting markets and the input-output structure will be put into practice in chapter 4, where we look at the fresh vegetable value chain in the Rift Valley of Ethiopia and finally discussed in chapter 5.

In the following part 3 on the conceptual framework we will go deeper into the four dimensions we defined as cross cutting issues for the value chain analysis. As described in chapter 2.1, the group developed the conceptual framework for the study project on fresh vegetable value chains (see Table 1) during the study course with the aim to examine the value chain and to understand the interlinkages between the four concepts and the value chain.

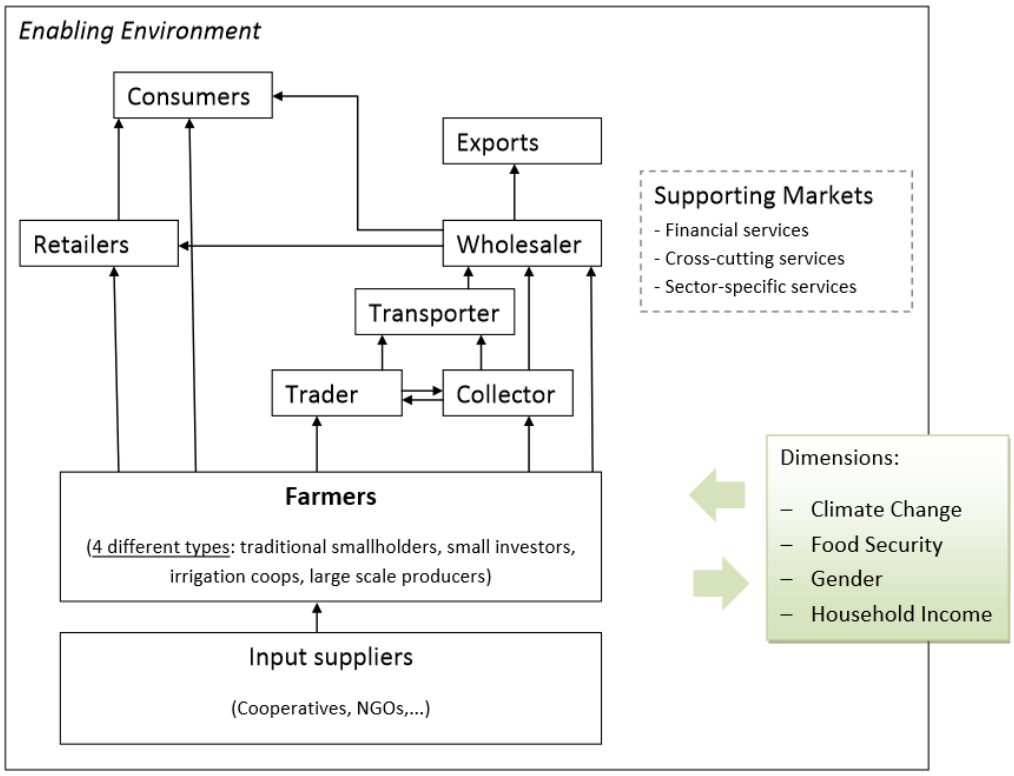

Table 1 Conceptual Framework (own illustration)

3.2 Gender

3.2.1 Definition of Working Concept "Gender"

Gender is an abstract construct which refers to the social realities of male and female members in any society and, therefore, is the socially created meaning of the biological sex differences (McCormick/Schmitz 2001, Ogato et al. 2009a). Gender roles are determined by the socioeconomic and cultural environment of the society and refer to the different behavior and status attributable to men and women. Depending on the specific society, gender differences can have a small or rather big effect on the distribution of resources, wealth, work, decision-making processes, political power as well as the enjoyment of rights and entitlements within the family and in public life (Ogato et al. 2009a). Gender issues do not only refer to the different positions of men and women in the sense of the society, but also to the relations between male and female, husbands and wives as well as boys and girls (McCormick/Schmitz 2001). Gender issues are not static, but can change over time and are affected by many different factors such as wealth categories, income or status.

Especially in developing countries such as Ethiopia, socio-cultural differences between men and women play a crucial role. For analyzing the impact of these gender differences on the wellbeing and the food security in a society, it is important to understand the role of women in regard to different aspects. From an economic point of view, the role of women in different production value chains and the division of labor among men and women need to be assessed. In many parts of the world women are the main labor force who are actively working in agriculture (Elias et al. 2014). According to the FAO (2011 in Elias et al. 2014) women comprise an average of 43 percent of the agricultural labor force in developing countries. In addition to the working environment also intra-household relations within the family are important to analyze: This includes for example the relation between men and women according to the distribution of power and the involvement of women in decision making processes.

In regard to vegetable production in Africa, women are even seen as the principal producers of vegetables (Dolan/Sorby 2003 cited in Gebremichael 2009) and as predominantly involved in the value-addition activities from production to marketing (AVRDC 2007). Several studies indicate the production of vegetables as a provider for new and profitable income sources for women due to their high value-addition and income generation potential. The thereby enhanced social and economic status of women can lead again to greater household food and nutrition security but also to an increased

consumption for themselves and their families, that improves their health and work performance (SUBRAMANIAN et al. 2000 and IFPRI 2005 in GEBREMICHAEL 2009).

3.2.2 Interlinkages between the Concepts of Value Chains and Gender

In a value chain male and female actors are playing different roles and are, therefore, facing different problems and constraints regarding the access to and control of resources in each stage. Barriers exist due to several factors in the actors' economic, social and institutional environment. There is also a big difference in the perception of the severity of a certain constraint. This has an important impact on the value chain as these constraints affect volume and quality of a product (LAVEN/VERHART 2011). By analyzing constraints on different value chain stages for both male and female actors, it becomes possible to identify improvements that would benefit the whole value chain. This could have many positive effects, for instance on income generation and food security (RIISGAARD/ESCOBAR FILA/PONTE 2010).

Many studies have shown that female actors face many more constraints and disadvantages in (agricultural) value chains than their male counterparts (LAVEN/VERHART 2011, RIISGAARD/ESCOBAR FILA/PONTE 2010, GIZIEW et al. 2014, BOLWIG et al. 2008, etc). Women are often placed in those parts of a value chain that are the least valued ones, especially in informal jobs or home-based work. Working in these kinds of jobs increases job and therefore also income and food insecurity and hinders them from being reached in an adequate manner by policies, governmental incentives or reforms that would strengthen their position. Especially in the agricultural sector female workers are often performing a high percentage of the labour but are not being represented adequately in the public (LAVEN/VERHART 2011). Male actors are normally also better integrated in social organizations which helps them to face constraints by cooperating with other actors who are dealing with the same problems (GIZIEW et al. 2014). In general men have enjoyed a better education than women which is another important aspect that makes male actors less vulnerable to many constraints. As one can see the difficulties producers are facing are the same but they are affecting male and female farmers in different intensity (BOLWIG 2008).

Many factors play together and are often mutually reinforcing, as for example that male farmers tend to get visited by extension agents more frequently than their female colleagues. The reason for this could also be that extension workers might prefer bigger

farms or those with better technology and equipment which again are mostly in the hands of male farmers. (RIISGAARD/ESCOBAR FILA/PONTE 2010)

Figure 2 Female retailers at the vegetable market in Addis Ababa

The Enabling Environment and the Supporting Markets should contribute to the strengthening of female rights and lead to equal chances for both male and female actors of the value chain. This could be achieved via institutional reforms, (socio-)economic incentives, specific policies, legal enforcement, social awareness raising, etc. In practice, nevertheless, women are often still disadvantaged even if institutional and political plans and reforms have been established (GIZIEW et al. 2014).

3.2.3 Hypotheses: Gender

Based on our extensive literature research we expect to find causal relationships between women's poor access to education, resources and extension services and the role they play in the value chain. Through women's considerable participation in the value chain they might also be the ones suffering the most from climate change. Thus our hypotheses are:

1. Women's marginal education and their disadvantaged position in terms of physical, capital and social resources forces them to leave more lucrative positions along the value chain to men.
2. Women are mostly left out when it comes to horticultural extension services.
3. Women will suffer more from climate change than other stakeholders of the vegetable value chain.
4. Women's contributions in the value chain are not visible enough, even though most of the additional value is created by women.

3.3 Climate Change

The Intergovernmental Panel on Climate Change is united in their statement that the climate system is unequivocally changing since at least the 1950s and that this development is unprecedented in its speed and impact. Furthermore, it is seen as a scientific fact, that the concentration of greenhouse gases such as CO_2, CH_4, N_2O and O_3 has increased, which led and still is leading to the warming of the atmosphere and the oceans. This is accompanied by decreasing amounts of snow and ice, leading to rising sea levels (IPCC 2013). Extreme events such as cyclones, floods, hailstorms and droughts are predicted to occur more frequently and severe, leading to higher fluctuations in crop yields and local food supplies and higher risks of landslides and erosion damage. In addition to this, yet another concern is that the dispersion of vector-borne diseases such as malaria, is likely to be affected by climate change in the sense that regions that become moister, will offer more habitats for disease vectors. This can affect food security as the people in the area in question are more likely to get sick with an infectious disease, resulting in a decline in labor productivity, increase in poverty and mortality (SCHMIDHUBER/TUBIELLO 2007).

"The strongest impact of climate change on the economic output of agriculture is expected for Sub-Saharan Africa (SSA), which means that the poorest and already most food-insecure region is also expected to suffer the largest contraction of agricultural incomes." (SCHMIDHUBER/TUBIELLO 2007, p. 3). Decreases in agricultural GDP are expected within a range of 2% to 9% in SSA, depending on the underlying projection model, making developing and poor countries more dependent on food imports and worsening the food security situation, as climate change, according to the findings of SCHMIDHUBER and his colleague will affect food security and availability, access to food, stability and food utilization. Changes in temperature and rainfall are expected for the whole African continent (HULME et al. 2001). The result of these changes is that former agricultural land becomes unsuitable for cropping and grassland becomes arid. Further, the range of agricultural pests increases due to a rise in temperature and pest populations will be more likely to survive winter and effect spring crops. Droughts in semi-arid areas can dramatically reduce agricultural productivity through increase in crop yields and livestock numbers (SCHMIDHUBER/TUBIELLO 2007).

3.3.1 Definition of Working Concept "Climate Change"

In the following we want to clarify the most important concepts related to climate change and give insight into the most critical facts in order to facilitate the understanding of the current academic discussion for the reader.

Projections of Temperature Change:

"The global mean temperatures will continue to rise over the 21st century if greenhouse gas emissions continue unabated" (COLLINS et al. 2013, p. 1031). The projected ranges for temperature increases worldwide are heavily dependent on which forecast model the information is based on. Nevertheless it can be said, that global temperature increases are virtually certain to lie within 0.3°C – 4.8°C. It is important to notice, that the change in temperatures will not be regionally uniform, but rather diverse. The changes over land e.g. are expected to exceed the changes over oceans and it is virtually certain that there will be more hot and fewer cold temperature extremes as global mean temperatures increase (COLLINS et al. 2013).

Changes in Precipitation and Water Resources:

Due to higher evapotranspiration caused by the rising global temperatures, it is strongly expected that in the long term, global precipitation will increase. As any situation caused by climate change the regional differences, which can be drastic, are to be kept in mind when estimating global water cycle changes. Thus, changes in average precipitation will probably manifest significant spatial variation, with some places seeing increases, and other regions seeing decreases and yet others without any changes at all. There is high confidence that the contrast of annual mean precipitation between dry and wet regions and that the contrast between wet and dry seasons will increase over most of the globe as temperatures increase (COLLINS et al. 2013). Changes in the precipitation pattern directly affect water resources. In a study conducted in 2003 it was found that especially in eastern Africa shortage of freshwater will be an issue in the short to medium term due to temperature increase, erratic precipitation patterns and increasing potential evapotranspiration. Associated consequences are the shrinkage of agrarian production, increase of food insecurity, degrading soils, detrimental land use change and higher number of extreme weather events (TAO et al. 2003). Further, it has been shown, that pressures on water resources such as land degradation, pollution, population and urban growth are exacerbated by climate change (KUSANGAYA et al. 2014).

Changes in Atmospheric Circulation

Prevailing winds and their strength, stability and direction are essential for climate. Changes of these winds are important indicators of climate change (REICHLER 2009). Mean sea level pressure is projected to decrease in high latitudes and increase in mid-latitudes as global temperatures rise. The tropics, the Hadley and Walker Circulations are likely to slow down. (IPCC 2013)

Abrupt Change

Although most of the forecasted effects of climate change are long term and gradually aggravating, several components or phenomena in the climate system could potentially exhibit abrupt or nonlinear changes, and some are known to have done so in the past (COLLINS et al. 2013). Among those events that are considered abrupt, are historical events that happened within years or decades and comprehend changes in the physical, biological and human systems that are directly sparked by changes in the climatic conditions (US ACADEMY 2014). Finally, it has to be mentioned that the effects of climate change are worsened by ill adapted land management practices, overexploitation of resources and poverty.

3.3.2 Interlinkages between the Concepts of Value Chains and Climate Change

A value chain always describes the addition of value to a particular product or a particular set of products. The chain is disturbed when some kind of outside power diminishes the process of value addition by either increasing the costs of doing so or the sheer possibility of enhancing the value under ex-ante circumstances. Climate change plays a role in both aspects. An example is the undertaking of so called resettlement projects of flood prone areas and several islands of the pacific, where local people are at risk of losing their livelihood due to changing environmental circumstances. In the Zambezi River valley in Mozambique thousands of farmers have been resettled, but because of ill-planned implementation of the resettlements not only have their possibilities to engage in agricultural activities been almost completely destroyed, also people in cities that have been reliant on the products of these farmers are now facing increased food insecurity (ARNALL 2014).

Additionally, climate change will change habitats and introduce pest species and illnesses to areas where there were previously unknown. This will have especially negative consequences in areas where unfamiliar pests appear and where the local population does

not have the capabilities, either financial or educational, to deal with the new situation properly. The consequences are failed harvests due to infected plants by new pests and diseases, lower yields as the ecological window of crops shifts or reduced livestock production because of formerly unknown illnesses or changing habitat factors such as temperature, humidity among others (PETTORELLI 2012).
Other reasons for reduced output at the producer level are less complex. Comparing the time period of 1931-1960 with the time period of 1968-1997 in semiarid and sub-humid zones in Western Africa, a decrease of rainfall between 15% and a staggering 40% has been asserted. This has obvious consequences on agricultural production in these areas and entails substantial costs to mitigate these effects (NICHOLSON et al. 2000).

When looking at other parts of the value chain apart from the production level, more effects of a changing climate can be distinguished. The infrastructure of a region or a country acts as the backbone of regional economy and a disruption can interfere not only with the product flow of a value chain but also with the up- and downstream economic development (WEI et al. 2015). Estimations of cumulative costs for the maintenance and reparations of roads in Ghana probably being damaged as a consequence of climate changes in the time period from 2020 to 2100 have been made. The estimates range at around $473 million if the country does not engage in any adaptation strategy. Interestingly, if adaptation is undertaken the initial cost will be even higher and is estimated at $678.47 million due to the initial expenses in adaptation provisions (TWEREFOU et al. 2015).
This insight does not only hold true for developing and emerging countries. Because of changes in temperature, frequency in storms at coastal areas, the sea level and rainfall it is projected, that bridges, coastal structures and urban drainage infrastructure will become more vulnerable and more susceptible to failure across the United States of America (NEUMANN et al. 2015).

On more important aspect is the occupational health of the workforce which will be directly reflected in the strength of the economy. Among the detrimental effects of climate change on the health and readiness of the workers of different industries, not only of the agricultural workforce, is heat stress. It has been shown, that heat stress reduces on the job performances and leads to more absenteeism (ZANDER et al. 2015). This is particularly important in middle- to low income nations in the tropical and subtropical zones (SPECTOR/SHEFFIELD 2014).

After having illustrated the theoretical background and several impacts of climate change on different aspects and segments of a value chain, the following sections will be examining if some of the mentioned interlinkages play a role in the Ethiopian horticultural value chain and what other parts that have not yet been discussed will be addressed by the interviewees.

3.3.3 Climate Change in Ethiopia and Hypotheses

A study by Wageningen University stated that „ Ethiopia is one of the countries most vulnerable to the impacts of climate variability and change on agriculture**“** (KASSIE et al. 2013, p. 58)**.** While the decrease of total rainfall between 1977 and 2007 was not significant, its variability is. As the number of rainy days decreases dry spells become more severe in their impacts and result in crop moisture stress in the growing season. Another observation is the considerable inter-annual variability in the duration of growing season between 1977 and 2007, varying between 76 to 239 days. Data suggest that while rainfall will increase in November and December, it will decrease during the important months of growing season. It is expected to become shorter by 12 to 35 % by 2080.

Concerning temperature, an increase by 0.12 to 0.54 °C per decade of the mean annual temperature between 1977 and 2007 has been observed, showing a significant warming trend. Rising temperatures lead to increase of the rate of evapotranspiration and crop water requirements further adding to the already frequent water stress of crops (KASSIE et al. 2013, p. 58). Future projections show that the mean maximum temperature will increase by 2 - 2.3°C until 2030 and by 2.2 - 2.7°C until 2050 while the mean minimum temperature will rise by 0.8 - 0.9°C until 2030 and 1.4 - 1.7°C until 2050, all in conjunction with a surge of hot days and nights and a decrease of cold days and nights (HADGU et al. 2015). In terms of ramifications brought by climate change it is important to note that not all of them are indispensably negative. It has been discovered that drought occurrence is likely to decrease due to measured positive rainfall anomalies in the years from 1980-2000 in the Omo-Ghibe River basin, which is close to our study area in the Rift Valley (DEGEFU/BEWKET 2015) although this development is limited to this particular region, whereas in other parts of the country droughts are subjectively perceived to increase.

Another important point is the increasing intensity of rainfall induced by less rainy days but constant amount of precipitation which can lead to erosion and runoff of soil and nutrients. The effects and interlinkages of climate change in Ethiopia are manifold. Since farms in our study area are mostly irrigated the problem of degradation of water resources should be mentioned.

Figure 3 Lake Ziway

For example, the water level of the most important water body in our study area, Lake Ziway, has decreased by around 0.5m from 2002 to 2007, discharge by the Bulbula River decreased by more than 150 million m^3 and Lake Abyata is now less than 60% of its original size. All these occurrences are due to climate change and lack of control mechanisms and unplanned development (JANSEN et al 2007, KASSIE et al 2013). In a study to examine the damages done to water bodies, forest areas and woodlands in the last thirty years it was found that the respective areas decreased by 15.3%, 66.3 and 69.2% (MESHESHA et al. 2012, p. 131). This was mainly attributed to unsustainable farming techniques, poverty and the Ethiopian land tenure system, but climate change plays an increasingly important role in land use and land cover change (LUCC) especially with respect to decreasing lake sizes (MESHESHA et al. 2012, p. 142). One effect of climate change is the increase of pH-value of the volcanic lakes in the main Rift Valley up to very high alkaline values of 9-10, which makes the water unusable for agriculture (CHERNET et al. 2001).

Looking at the model of the value chain we established, we differentiate between different actors, namely: Input suppliers, Farmers, Traders, Transporters and Collectors, Wholesalers, Retailers and Consumers. Based on this conceptual framework the aim is to identify where a changing climate is affecting or could affect the above mentioned key actors along the value chain for horticultural products (positively as well as negatively), and where susceptibilities lie.

We therefore state the following hypotheses which we seek to answer by interviewing the key actors during field work:

- Climate change is negatively affecting the reliability of yields for small-scale farmers.
- Communities with low food security are more exposed to climate change than communities with higher food security,
- Knowledge in the field of adaption to climate change in agricultural communities is limited.

3.4 Income Generation

The following section deals with the dimension 'income generation'. First, we treat rural income sources in general and therein the diversification of income. Furthermore, as transaction cost may have an impact on income generation, we shortly present the theory of transaction costs in agriculture. Relating to the topic of our study project, we then concentrate on the income generation potential of horticultural products such as fresh vegetables. Finally, we connect income generation with the value chain concept and present our hypotheses derived from theory.

3.4.1 Rural Income Sources and Income Diversification

In rural areas, one can generally distinguish two sources of income. On the one hand, there is income generated by agricultural activities, which imply crop and livestock production as well as agricultural wage employment. On the other hand, there are non-agricultural activities that generate income including non-agricultural wage employment, non-agricultural self-employment, transfer and other income sources (CARLETTO et al. 2007). It is also common to distinguish between on-farm and off-farm activities (DAVIS et al. 2010). Table 2 gives an overview of the classification of rural income sources.

Rural Income Generating Activities						
Agricultural activities		Non-agricultural activities				
On-farm activities		Off-farm activities				
Crop production	Livestock production	Agricultural wage employment	Non-agricultural wage employment	Non-agricultural self-employment	Transfer	Others

Table 2 Classification of rural income generating activities (own illustration)

According to different studies based on FAO's RIGA (Rural Income Generating Activities) database the majority of rural households in the Global South highly depends on smallholder agriculture although the non-agricultural sector is becoming more important. Particularly poorer households generate a high share of their household income from agricultural activities, whereas wealthier households specialize more into non-agricultural activities (DAVIS et al. 2010, CARLETTO et al. 2007). Middle income and rich rural households are more likely to diversify towards activities with a higher income generation potential. Entry barriers regarding land, human capital or other factors of production usually characterize those activities and prevent poorer households from participation (DAVIS et al. 2014, RIGG 2006).

There are different reasons why rural households diversify their income sources, e.g. market failures in the credit or insurance market. In the case of a nonfunctional credit market, farmers have to finance their agricultural activities by earnings from other activities whereas an imperfect insurance market necessitates income diversification in order to spread the risk among different income sources. Moreover, due to seasonality of agriculture, rural households may engage in non-agricultural activities during the off-season in order to smooth consumption. Aside from that, diverse skills and comparative advantages of particular household members can be a reason for income diversification. Thus, on the one hand, income diversification can be regarded as a household strategy to deal with risks and market failures and on the other hand, as an outcome of individual skills of household members (DAVIS et al. 2014).

3.4.2 Transaction Costs in Agriculture

When talking about agricultural production, it is important to understand the term of transaction risks and costs. In the literature one can find many definitions of transaction costs, but generally they are understood as those costs associated with the act of exchanging ownership rights of economic assets (DE SILVA et al. 2010). SINGH (2008) states that transaction costs are broadly interpreted as costs associated with market exchange; and exchange itself is costly (ENDALEW 2012). COASE (1937) introduced the concept of transaction costs associated with information, negotiation, monitoring, coordination, and enforcement of contracts. The definition by STAAL, DELGADO and NICHOLSON (1997) classifies transaction costs into observable and unobservable transaction costs. The observable transaction costs include marketing costs such as transport, handling, packaging, storage, spoilage etc. that are visible when a transaction takes place. Unobservable transaction costs include cost of information search,

bargaining, and enforcement of contracts and the like. Besides, transaction costs differ individually for each market participant, and therefore economic actors are not interchangeable (ENDALEW 2012). The existence of transaction costs, being specific to each market actor, implies that there is no single effective market price at which exchange occurs (SADOULET/DE JANVRY, 1995). Each agent in the market conducts transactions with regard to his or her specific transaction costs. The implications of transaction costs are that markets are thin or fail if high costs prevent exchange.

Actors in Ethiopian trade may face various transaction risks closely linked to agricultural market arrangements, because of the fact that markets in developing countries are characterized by a broad range of failures that affect individuals and those institutions that attempt to improve how markets function (MEIJERINK 2014, ABAY et al. 2015). Often such markets are not only inefficient and lack transparency, but also deficiencies in contract enforcement and monitoring result in costly transactions. Nevertheless, markets play a paramount role in Africa (FAFCHAMPS 2004), because they do not only represent opportunities for (small-scale) farmers and are important for poor consumers who spend significant proportions of their incomes on foods, but also because they constitute (informal) employment opportunities for many urban poor, including women, who engage in small-scale trade (MEIJERINK 2014).

In the following the different attributes of transaction costs and its contractual aspects are explained, as well as the different stages of transaction costs in agriculture.

Attributes of transaction costs

Transaction costs have specific attributes that are influencing the transaction risks (see figure 4); these are asset specificity (1), uncertainty (2), difficulty of performance measurement (3) and coordination problems (4) (WILLIAMSON 1998). Firstly, **asset specificity** (1) can play a role for vegetable production when there are specific production requirements, such as for organic production. This creates dependency between the producer and buyer. On the one hand, the producer depends on the buyer to pay a premium price for organic vegetable that would not be possible at the spot market. On the other hand, the buyer depends on the producer to supply vegetables that fulfill the requirements of organic produce, because the buyer cannot buy this from an alternative source like spot markets. This dependency usually makes (formal) agreements necessary, as well as contract enforcement in order to reduce this risk, but may entail high transaction costs.

Secondly, **uncertainty** (2) influences transaction costs because of inherent high risks. For example, climate conditions can be harsh with regard to long periods of drought, which heavily increases uncertainty in agricultural production. This leads to the fact that agreements and contracts are hard to implement, because (re-) negotiating and adaptation might be required when unforeseen events emerge. Price volatility also poses a high transaction risk to farmers when they want to sell their produce after harvest. Also the aspect of **frequency** plays an important role with regard to transaction costs along the value chain. Vegetables might be only produced once a year, which means that buyers and sellers do not meet regularly (e.g. every week) throughout the year, but only in the period after harvests. This can impede relationship building and trust creation, which both need time. The relationship between specific sellers and buyers highly depends on the given market conditions that allow for one-time, occasional or recurrent transactions.

Thirdly, transaction risks and costs are influenced by **difficulties of performance measurement** (3). The extent, to which measurement of certain vegetable traits poses a transaction risk, depends on the buyers' requirements and the type of vegetable. The requirements may differ for different buyers. In some cases there might be very stringent requirements, which involve close monitoring of the production process, in other cases quality can be assessed fairly easy by inspecting the produce. The higher the requirements and the higher the costs of measuring certain traits, the higher are the transaction risks.

Finally, the fourth attribute of transactions is the **coordination requirements** (4). Even when vegetable production is relatively extensive with respect to inputs, (mechanized) labor input is still often crucial at harvesting time. If the key inputs like tractors and/or human labor etc. are not available, it might increase the risk of harvest failure (in terms of quantity or quality).

Contractual aspects of transaction risks

Transaction costs are based on the phases of achieving an exchange (MEIJERINK 2014). Three phases are usually distinguished: before an exchange, during the exchange and after the exchange, also called "contact (1), contract (2) and control (3)" (see figure 4). The main problem existing here is the contract enforcement, that is to say the problem of enforcing agreements in exchange is at the heart of economic life. The problem of contractual commitment is a question of the cost of various enforcement mechanisms and

efficacy with which these mechanisms improve the confidence contracting parties have regarding the performance of their agreements.

Firstly, before an exchange can be made, in the "**contact**" (1) phase, market participants need to collect information and search for trading partners in order to reduce the transaction risks of production. These would be for example trading with unreliable partners, trading at too low or too high prices (depending on whether one is selling or buying) or buying or selling wrong quantities (unsold inventories going to waste) etc.

Secondly, during an exchange, in the "**contract**" (2) phase, the terms of the agreement need to be specified and negotiated to reduce the risk that both parties do not get what they wanted out of the exchange. The quantity, quality, price, payment, timing of the produce exchanged must all be clarified and agreed on. In order to reduce transaction risks, usually costs related to time and expenses are put into negotiation with the other contract party. Thirdly, the phase of "**control**" (3) consists basically of verifying whether the exchange has been fulfilled according to the negotiated agreement to reduce the risk of not being paid or delivered (in time) etc. This is linked to the transaction attribute of "performance measurement".

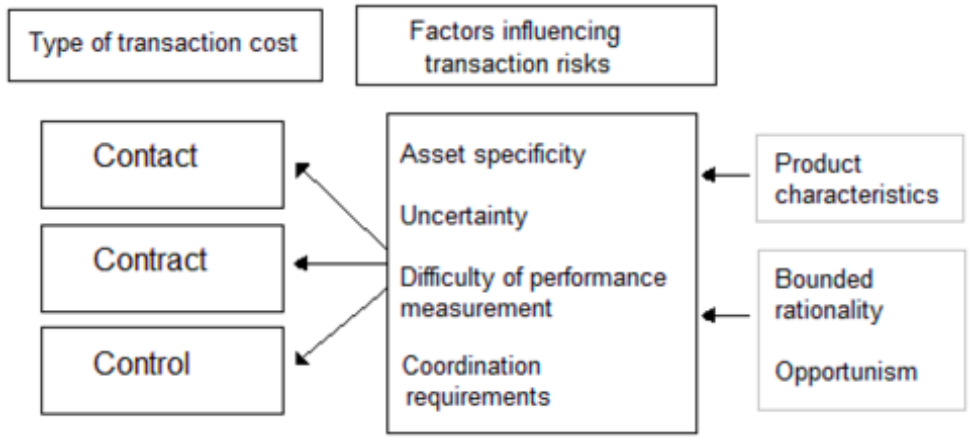

Figure 4 Transaction Risks and Costs (Source: MEIJERINK 2014)

Stages: From planting to selling

DE SILVA et al. (2010) categorizes transaction costs in agriculture in the six following stages, i.e., from the planting decision to selling at the wholesale market. At each stage several transaction risks and costs may arise (see figure 5).

Figure 5 The agricultural value chain (Source: DE SILVA et al. 2010)

In the first stage farmers decide what type of crop to grow, how much land to allocate for each crop and they also arrange financing ("**Deciding**"), e.g. search costs of visits to farmer association officials to decide on a crop. Secondly, during the stage of "**Seeding**" farmers either purchase seeds externally or prepare their own seeds. They might also prepare a seedbed during this stage. An example of search costs may be costs of finding information about a particular type of seed. The third stage "**Preparing and planting**" consists of land preparation using labor or machines and actual planting occurs during this stage as well, e.g. search costs for finding labor. Fourth, in the stage of "**Growing**" farmers apply fertilizer, pesticides and water. Here an example of search costs is the costs of travelling to purchase inputs. The fifth stage containing "**harvesting, packing and storing**" consists of finding labor for harvesting, the process of harvesting itself, packing and storing, e.g. search costs of finding market prices. In the final stage of "**Selling**" (some) farmers check prices at the market. They find a method of transporting, then transport the packed produce to the market and sell (e.g. search costs of comparing prices of different traders).

The analysis of transaction costs in agricultural production is important, especially with regard to the income generation of smallholder farmers, as decreasing transaction costs may lead to higher net incomes and better livelihoods.

3.4.3 Income Generation Potential of Horticultural Products

Horticultural production such as cultivation of vegetables counts as an activity with high income generation potential. Condensing different studies on the income effect of horticultural production on smallholder farmers, WEINBERGER and LUMPKIN (2007) state that the income of a farm involved in horticulture is between 20 % and 497 % higher than the income of a non-horticultural farm. Furthermore, compared to the cultivation of staple

crops, horticultural production is usually more labor-intensive. Farms involved in horticultural production usually cover this additional labor demand with hired labor that creates employment opportunities and generates income for other farmers and landless laborers. Besides, the horticultural sector requires additional labor in downstream activities such as transport and packing and therefore creates job opportunities in the postharvest sector. (WEINBERGER/LUMPKIN 2007)

On the one hand, horticultural products such as vegetables have a higher income generation potential than other crops like wheat or corn. But on the other hand, horticultural production is more risky for farmers because of several factors including:

- the perishability of the products,
- high price volatility and
- higher production cost (WEINBERGER/LUMPKIN 2007, LUMPKIN et al. 2005, BIRTHAL et al. 2005).

As mentioned above, (smallholder) farmers face transaction costs at different stages of agricultural production. The perishability of horticultural products increases their transaction costs at the fifth and sixth level of production ("harvesting, packing and storing" and "selling") even more (BIRTHAL et al. 2005). Apart from that, farmers do not have the possibility to store their products awaiting higher prices in the future (WEINBERGER/LUMPKIN 2007). Along with the lack of access to markets as well as the lack of market and price information, smallholder farmers become vulnerable to exploitation by marketing intermediaries (LUMPKIN et al. 2005, MARKELOVA/MWANGI 2010, TOLLENS 2006). In summary, being involved in horticultural production as a smallholder farmer entails higher market and price risks compared to other agricultural activities.

In order to cope with these risks and in order to benefit from the high income generating potential of horticultural crops, smallholder farmers may not only rely on (one) horticultural product(s) but instead apply crop or income diversification as a risk management strategy (as described in Chapter 3.4.1) (PELLEGRINI/TASCIOTTI 2014). Another option for smallholder farmers to decrease market and price risks is to become organized in cooperatives or any other form of collective action. By doing this, farmers can reduce transaction costs, receive market information and avoid intermediaries. (MARKELOVA/MWANGI 2010, BIRTHAL et al. 2005)

3.4.4 Hypotheses: Income Generation

Linking the dimension of income generation with the value chain concept, the question of income distribution along the value chain arises. A value chain analysis (VCA) enables the decomposition of the total earnings in order to explain distributional outcomes. Thereby, it outlines the proportion of income earned by different stakeholders at different stages within the value chain. It also helps to detect which activities are well remunerated and which are not. In practice, one can analyze these distributional outcomes by gathering information on prices and wages along the value chain. (KAPLINSKY/MORRIS 2001)

In chapter 4.3.3.3 we will provide such an analysis as far as our collected data allow taking the example of the observed tomato value chain.

Given the focus of this study project on smallholder farmers, we derived the following five hypotheses that mainly refer to vegetable farmers in the study area:

1. Farmers involved in vegetable production face high price volatility.
2. Farmers that are involved in vegetable production diversify their income sources.
3. Lacking market integration and infrastructure lead to dependency on market intermediaries and loss of income.
4. Within the current market situation high transaction costs exist along the VC.

In order to decrease transaction costs and to deal with market risks farmers organize in cooperatives.

3.5 Food Security

An important dimension we want to consider in relation to the value chain analysis is that of food security. This chapter sets out the theoretical background on food security in the vegetable value chain. First, we will introduce how the right to food and food security are defined, how they differ and how they relate to each other. After that, we look at what food security means with respect to the vegetable value chain, how the production of fresh vegetables affect food security in a region, and how different actors and relations within the value chain affect food security. Although the food security of all value chain actors needs to be considered, this research will focus mainly on the food security of small-scale farmers and consumers. The section concludes with a series of hypothesis on the relations between food security and the different aspects of the vegetable value chain.

3.5.1 The Concepts of Right to Food and Food Security

The Right to Food

The concept of *Right to food* has its origins after the second world war in the adoption of the United Nations Charter in 1945 and, more particularly, the Universal Declaration of Human Rights (UDHR) in 1948 (FAO 2009). In that sense the UDHR was the first international instrument that understood the right to food as a right to an adequate standard of living (FAO 2009). The perception of food as a human right was followed by the establishment of certain binding and nonbinding instruments. Binding instruments such as treaties have a legal state so that state parties have to follow them. Non-binding instruments however, serve rather as a moral obligation (FAO 2009). The right to food is integrated in several different instruments – most comprehensively in the International Covenant on Economic, Social and Cultural Rights (ICESCR), which was ratified by 160 states in 2009 (FAO 2009). To understand the struggle for a country, region or individual for food security, it is crucial to look at the national and regional instruments and the policy environment regarding the right to food (FAO 2014).

Food Security

Food security is an operational term and a policy concept, which is need-based and program oriented (FAO 2009). It is defined as a condition "when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life" (FAO 1996). For this definition four different dimensions have to be considered: availability, accessibility, stability and utilization of food (see table 3). Availability refers to a general access to food, either to feed oneself from own production or through a well-functioning market-system. It also implies the availability of the right quantity for one person in an average active existence (FAO 2009). Besides the availability of food, accessibility needs to be guaranteed. This applies to the physical access, which is determined by the infrastructure, and the economic access, which is depending on the income, food prices and the access to social support (FAO 2009). Amongst others, price shocks can have a major impact on the dimension of economic access by eroding the purchasing power of net food consumers (FAO 2014). The stability refers to availability and accessibility of food and stands for stability in the supply of food (FAO 2009). The utilization in the concept of food security involves the handling of food- and non-food-inputs such as following an "adequate diet, clean water, sanitation and health care to reach a state of nutritional well-being where all

physiological needs are met" (FAO 2009, p.18). The dimension of utilization is equally important for a safe and healthy diet as the access and the availability, but it is not a component of the right to food-concept (FAO 2009).

Whereas availability and accessibility are taken into both the food security and the right to food definition, the right to food concept includes the condition of adequacy. Adequate food relates to the quality of food, such as safety standards and nutrients, but it also encompasses culturally acceptable food (FAO 2009). So the right to food goes beyond the aim, that people should escape hunger and malnutrition. It places the individual in the center and links the right to food to other human rights, like dignity, transparency, empowerment and participation (FAO 2009).

For the study project and the field work, we concentrated on the concept of food security, since those four pillars of the concept are better to research on in our focus region and with limited time in the field.

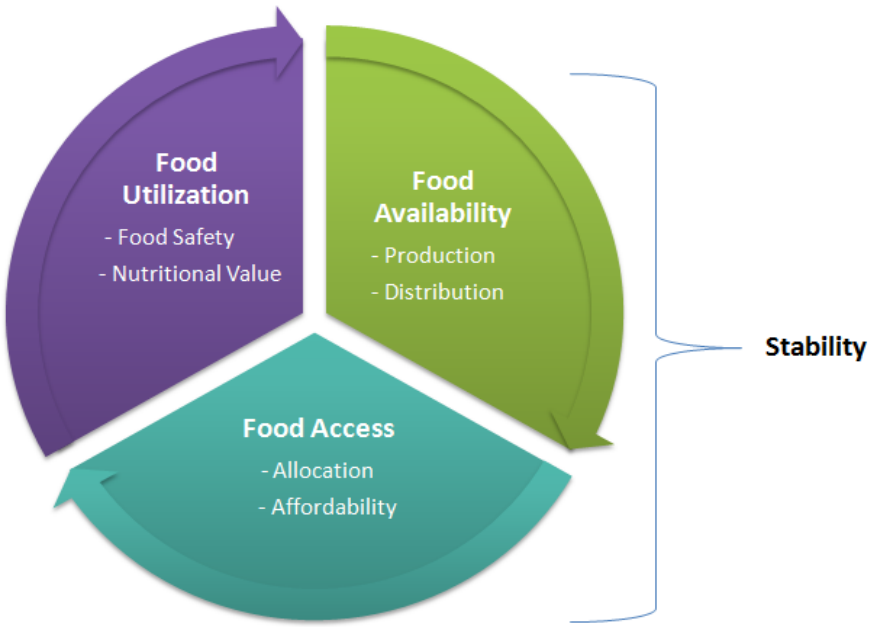

Table 3 The three dimension of food security leading to food stability (own illustration after FAO 2009)

3.5.2 Food Security in the Vegetable Value Chain

The value chain approach can be a suitable framework in researching food security-related topics as well as a hands-on approach for enhancing food security. It can be used to place incentives of desired behavior on different stakeholders depending on their position and power within the value chain. In the context of research the value chain approach can be used as an analytical framework to assess food security-related topics in a systematic way. The systematic perception of the value chain approach enables it to

target an array of important aspects (see chapter 3.1). This includes the connection of zones of production and zones of consumptions (mostly rural-urban linkages) by understanding production flows and transaction costs. Furthermore it includes the strengthening of the enabling environment (social-safety nets, food markets etc.) and the supporting markets (extension services, technology transfer, transport, storage and finance).

Generally a vegetable value chain consists of five main parts: Natural resources, food production, processing, market and consumption. Upgrading strategies along the vegetable value chain often bring added value for the stakeholders involved (e.g. improving their knowledge base to increase adaptation flexibility in food insecure situation). (GREAF et al. 2014). A combination of increasing production, reducing postharvest losses (which is a key concern in horticultural production), improving market efficiency and strengthening regional trade flows between surplus and deficit areas (urban-rural-linkages) seem appropriate to improve the overall food availability. This includes making an appropriate mix of sufficient food (nutrition) available for consumers (cf. KUMAR et al. 2011, USAID 2014).

A strength of the value chain approach is to determine underlying causes of food insecurity as for example underinvestment of farmers or other actors in necessary infrastructure or innovative approaches of farming. Especially when looking on improving infrastructure as roads or storage facilities not only must the initial cost of investment be considered, but also the ability to maintain these on a long-term bases.

Still some challenges may emerge in trying to integrate food security and the value chain approach including: Value chain selection (staple crops/cash crops, agricultural/non-agricultural), area selection (high potential versus high need), product selection (cash crops versus subsistence crops) and income maximization versus risk minimization (maximize household profitability may not be best option to increase food security (USAID 2014).

Production and input supply

On the producer's side, the main incentive would be to increase productivity in a sustainable way. This can be achieved by installing adequate market infrastructures, limit large price fluctuations for basic food items, incentivize the growth of nutrition food, and enable access to input supplies (USAID 2014). As input supplies are an important factor for horticultural production that influences food security in a region, enabling access to

adequate inputs should be of major concern. It is not only relevant for subsistence farming, but also for smallholder and commercial farmers. Inputs determine production capacity and therefore the availability, accessibility as well as the stability of food throughout the year. For subsistence and smallholder farmers, the yield determines if enough (subsistence) food is available, and if enough income can be generated to buy additional food items to complement their diet (MINISTRY OF FOREIGN AFFAIRS OF THE NETHERLANDS 2011).

Low yields and insufficient production are often the result of the limited use and access of yield-increasing inputs (e.g. improved seeds, fertilizers, and pesticides) (LOMA-OSSORIO et al. 201, BAIPHETHI/JACOBS 2009, SPIELMAN et al. 2009). Important barriers in obtaining these inputs for smallholder farmers are poor access to input markets as well as high prices for input supplies (ALIBER/HART 2009).

Credit constraints, risk aversion, and lack of awareness are particularly hindering the use of production increasing inputs. Female farmers are especially vulnerable to these barriers (GINE et al. 2015). In addition, limited access to land and land insecurity (also mainly experienced by female farmers) negatively affect household income and thus food security of small-scale farmers (LOMA-OSSORIO et al. 2014). Furthermore, not only the access to land but also the land management techniques have a high impact on food security. Farmers that use soil conservation techniques can improve soil fertility as well as water availability, which have positive effects on productivity and hence on farmers income (to buy additional food) and the availability of self-produced food for subsistence (BOLWIG et al. 2010; BAIPHETHI/JACOBS 2009).

Trade flows and marketing efficiency

As the value chain approach tries to work along the whole process of a product from sourcing the natural resources until consumption, trade flows and intermediate actors are of special importance (KUMAR et al. 2011). Improving marketing efficiency by analyzing the transactions costs and margins throughout the different actors in the value chain further can help to improve food security significantly. In order to do so losses caused by bottlenecks or gaps in the marketing system need to be identified. In the case of a regional/local maldistribution of food items, knowledge on distribution flows is essential to understand underlying decision-processes of the different intermediate actors (traders, wholesalers, brokers and transporters). This especially includes an analysis on the availability of market information of these different value chain actors, which in most

cases strongly influences their decision-making. Knowledge on distribution flows can help momentously to determine if, and if not, why products are (not) reaching food insecure consumers (US AID 2014).

Consumption

As the value chain approach is a market based approach it also focuses on increasing local household incomes and provide them with an opportunity to purchase additional (more

Figure 6 Vegetable retailer and students during an interview at the vegetable Market in Addis Ababa

nutritious) food (US AID 2014). This opportunity is strongly related to actual prices on the markets as a constraint for economic access (FAO 2014). Poor consumers face the risk of food price shocks and volatile prices, whereby an increase in food prices can affect either the amount or the variability of purchased food. In contrast, the producer side can even benefit from increased food prices on the market (ALWANG et al. 2011). The increase in prices can lead to the direct income transfer from urban to rural households. At the same time it can affect the food security of the poorest rural population, since they are consumers as well and some basic commodities turn out to be not affordable anymore (MATZ et al. 2015).

The enabling environment

The enabling environment encompasses diverse actors, such as the government, governmental organizations (national/ local) in charge of laws and policies and civil society organizations (CSOs)/ NGOs participating in political decision-making. Government investments in food markets, trade flow and productivity growth affect the production and distribution side and by that the availability of food (JAYNE ET AL 1994). In order to shape food availability in a positive way, the creation of a business enabling environment (BEE) plays a key role. This incorporates factors as trade and tariff policies, the existence and quality of rural infrastructure (e.g., roads, storage facilities), harmonized grades and quality standards, and transparent land tenure systems (US AID 2014).

Rural infrastructure is a key determinant in facilitating a good working value chain, and in connecting areas of surplus and deficit. Mostly this accords with linking rural and urban areas, as urban areas have a high demand of food products but very limited production capacities. Therefore, investment in transport infrastructure, storage capacities communication and electric infrastructure is crucial. This can be done solely by the government, in public-private partnership (PPP) or be assigned to private investors. A public infrastructure that improves the transport, storage and distribution of food improves the availability of and access to food at the same time (US AID 2014).

Quality standards set by governments (e.g. thresholds for chemical residues, hygiene standards in food handling) make food product more transparent and safe and by that ensure that they can be consumed more safely. At the same time high standards can, as well as harmonized grades, produce barriers for farmers with a lack of financial resources or information (DANNENBERG/NDURU 2012).

Transparent land tenure laws introduced, enforced and controlled by the government are an important factor to guarantee a profitable and sustainable land use in horticulture. If the land use is not at all regulated, the danger of over exploitation and land degradation is given, which severely affects the productivity and thus the availability of food. Opaque land distribution can hinder especially the access of low-income groups to food and jeopardize their food security (FAO 1998).

Supporting markets

Supporting markets can play an essential role in food security by supporting access to inputs, providing credits to buy inputs, and give training about adequate agricultural techniques in order to improve yields. Important actors in this segment are banks who

provide credits, cooperatives who can lower barriers to access credits and provide inputs and irrigation possibilities, extension workers who provide market information and give trainings about agricultural technology and improved practices, and NGOs who also provide trainings, can simplify access to credit as well as market information (ALIBER/HART 2009, LIVES 2015).

There are barriers, though, to the efficiency and effectivity of supporting markets. Due to high staff turnover, and limited knowledge on horticultural production in the extension segment impact can be limited. Another issue observed with extension workers is that they focus on the distribution of important inputs (fertilizers, seeds, pesticides etc.) as well as support with credit access, but by that neglect the training on knowledge and production techniques. At the same time, the provision of credits and inputs are more and more shifted to cooperative organizations, which would give extension workers the opportunity to focus more on the knowledge transfer (BERHANU/POULTON 2014). A restriction to put more emphasis on the knowledge transfer of production techniques is the lack of basic infrastructure, facilities such as equipment, demonstration fields, as well as human and monetary resources (LIVES 2015).

In addition supporting markets can be involved in nutritional education and the dissemination knowledge on the use of food. This is an important aspect in fostering food security, which can be propagated by extension workers, but also by NGOs (BAMMAN 2007). Although vegetables and pulses are of vital importance in a nutritious diet, especially for farmers that produce for subsistence, extension agents often have just little knowledge on them and their nutrient value (FLUSS/WOLDETSADIK n.y., IFPRI 2011).

In comparison with other (private) extension actors, NGOs often have a pro-poor attitude towards value chain development. While private companies may invest in their relationships with poor producers as an effort to improve their environmental and social credentials as part of CSR-scheme, NGOs may provide technical and financial assistance to value chain actors to improve their livelihoods out of an intrinsic volition. Therefore, NGOs are important actors in contributing to food security of smallholder producers (STOIAN et al. 2012).

3.5.3 Hypotheses on Food Security in the Vegetable Value Chain

In this report, we want to examine how the right to food is implemented in Ethiopia and how this works out in reality. On the one hand, we can assess this by looking at how food security is implemented in the Ethiopian institutional environment. On the other hand, we have the case study of fresh vegetables in the Rift Valley to look at food security in this

region and how it is affected in the vegetable value chain. Based on the last paragraph, we came to a set of hypotheses about the relation between the vegetable value chain and food security. We differentiate between food availability, food accessibility and the use of food, which are all needed to reach food security. By verifying these hypotheses in chapter 4, we are able to determine if there is food security in the Rift Valley region, and if not, which aspects have to be improved to reach it.

- Low yields are a cause of low food availability. A barrier to increasing yields is knowledge on the use of inputs, as well as the limited access to inputs due to inaccessible input markets, high input prices, lack of credit and savings, and risk aversion
- Limited knowledge of value chain actors on market information and trade flows causes a mismatch of supply and demand, which affects availability and accessibility of food.
- High food prices as well as high volatility of food prices negatively affect food accessibility for smallholders and consumers that buy fresh vegetables
- Smallholder farmers have limited knowledge about the use of food, which negatively affects food security.
- Poor local infrastructure, a lack of quality standards and insecure land tenure negatively affect food security.

Low efficiency of supporting markets limits the dissemination of knowledge, which affects food availability through agricultural production and use of food through knowledge on food safety and nutrition.

3.6 Interlinkages between the Concepts

The four concepts, gender, climate change, income generation and food security, were used to analyze the vegetable value chain from different aspects and in order to guarantee a comprehensive insight into the subject matter. Of course, these four concepts do not live in an isolated space next to each other but are interwoven and have several overlaps and connections that should not be ignored when reading the findings of the different viewing angles that yielded in our fieldwork. For this purpose a compact overview of the interlinkages between the four notions is given in the following. Please note that the interlinkages are always to be seen reciprocal, thus the four concepts compose six paragraphs in total.

Climate Change with Food Security

Climate change is expected to affect four dimensions of food security: food availability, food accessibility, food utilization and food systems stability. Therefore, the impact on human health, livelihood assets, food production and distribution channels, as well as changing purchasing power and market flows is enormous and profound. The consequences are both short term, such as an increase of the poignancy of droughts, floods, hurricanes and forest fires, and long term caused by changing temperatures and precipitation patterns. People who are already vulnerable will suffer from the consequences of food insecurity first, especially poor farmers will be affected by the ramifications of climate change (HEINRICH-BÖLL STIFTUNG 2009). The immediate risk of increased crop failure, new patterns of pests and diseases, lack of appropriate seeds and planting material, and loss of livestock is first and foremost threatening small agriculture-based livelihood systems (FAO 2008). Without governmental support or food aid for some regions, climate change can provoke dangerous food insecurity and lead to mass migrations and turmoil. A considerate use of resources could mitigate climate change and strengthen food security at the same time (HEINRICH-BÖLL STIFTUNG 2009).

Climate Change with Gender

Changing climate will have effects on many different actors along the value chain. People who are socially, economically, culturally, politically, institutionally or otherwise marginalized are especially vulnerable to climate change and also to some adaptation and mitigation responses (IPCC 2014). From the findings of the Inter-governmental Panel on Climate Change in 2014, it can be derived that the general consequences for underprivileged parts of the society, such as women, are to become even graver and that the already existing detrimental circumstances of the livelihood of rural communities are expected to worsen. Male-headed households are 18.2% more likely to diversify crop varieties, 12.2% more likely to conserve soil and 14% more likely to use irrigation as an adaptation strategy to climate change (GEBREHIWOT/VAN DER VEEN 2013). Furthermore, male-headed household tend to aggregate information about new technologies faster than female-headed households (ASFAW/ADMASSIE 2004). The disadvantages women are facing make it also difficult to cope with climate change and its consequences. One impact of climate change will be the occurrence of more frequent food price shocks. In the years 2007 and 2008, Ethiopia faced a food price crisis and it has been shown, that women and female-headed households are extraordinarily vulnerable to food price changes (KUMAR/QUISUMBING 2013).

Climate Change with Income Generation

Generally it can be said, that income risk is augmented under unstable conditions that are created by climate change. The effect on income generation is rather diverse, as climate change affects the value of an agricultural product along the value chain gravely. Expected issues for the generation of income with respect to climate change are particularly the reliability of harvest yields due to a higher frequency of droughts and erratic and unpredictable rainfall and all other aforementioned consequences. Additionally, the need to plant more resilient and adaptive crops which require additional know-how and adjustments and increases costs. In the case of water becoming scarcer and rain becomes more unpredictable than before, efficient use of water resources becomes highly important, often requiring technology for irrigation and pumping, which means costly investments for farmers. Following simplest economic rules, the increasing scarcity of water might also drive up the price for water used in irrigation schemes, putting another burden on agriculturalists. Post-harvest management needs to adapt to changing climate, too. Storing, cooling and transportation impose new challenges that needs to be met in order to maintain the quality of the produce. All the aforementioned implications are cutting into the margins of the farmers. Many of which also require significant upfront investments which presuppose a certain amount of available money or accessible credits or loans which often is a bottleneck in remote rural communities (GEBREHIWOT/VAN DER VEEN 2013).

Income Generation and Food Security

Income Generation is connected to the concept of Food Security via the pillar "access" as income is a precondition to secure the supply of food in the first place. A certain level of income is necessary for not only being able to buy food at all but also to buy enough food of good quality that assures a healthy lifestyle through nutritious food consumption. Whether the income is generated from agricultural or non-agricultural activities, it enables the farmers to complement their diet and that of their families with food which is not produced by themselves (MINISTRY OF FOREIGN AFFAIRS OF THE NETHERLANDS 2011, US AID 2014). Furthermore, income generation of farmers and food security can be seen as a cycle that strongly affects the availability of food: if farmers producing for the market are not able to generate sufficient income by selling their product, they are forced to rather change the product or even to abandon the agricultural sector. This can have a massive impact on food availability in the region and therefore on food security (BARKER 2011).

Gender and Food Security

Without women it is difficult to reach Food Security, because in most of the countries and households women manage the food supply for their families and also in general produce, process and provide food. At the same time in many cases men decide traditionally on the amount and kind of crop grown and receive the income from cash crop production. This can affect the amount or quality of the food left for the household consumption. Furthermore studies revealed that ca 50% of the reduction of hunger in developing countries between 1970 and 1995 were caused by women education and her improved situation in society (FAO 2014).

Women and girls are the most common victims of "food discrimination" as their health is stronger affected by poverty and they have less access to health care because of financial constraints as well as cultural beliefs (World Bank 2009). Especially in rural areas women and girls often only get the food left over after the male members of the family have eaten. This causes them to suffer more often from malnutrition and illnesses such as anaemia (FAO 2015a).

Gender and Income Generation

Gender plays an important role in terms of Income Generation and vice versa. Sometimes men and women get paid differently for the same job but even if jobs are being paid the same regardless of the gender, women normally get jobs that are lower paid than the ones men are doing (GIZ 2015). This keeps being a prevalent practice partially due to traditional perceptions of "male tasks" or "female tasks" but also due to the fact that better paid jobs are given to people with higher education and more working experience. Therefore females face disadvantages as they "lose time" by fulfilling their reproductive task. They are also more often illiterate or have only marginal education as families decide to only send their sons to school and keep their daughters at home. (WORLD BANK 2009) Women also have far less access to credit, either because they don't earn enough money to make the initial payment to get the credit (FHH) or because their husbands hold the right to make all financial decisions on what the money is spent (MHH).

4 Case Study: Ethiopia

4.1 General Introduction of Ethiopia and the Study Area

The aim of this section is to introduce and present Ethiopia as a country. First, its geography and environment are presented and then its economic, political and social situation is described.

4.1.1 Natural Environment

Ethiopia is a landlocked country in the Horn of Africa bordered by Djibouti, Eritrea and Sudan in the North, by Kenya in the South, by Somalia in the East and by South Sudan and Sudan in the West and North-West. It is the 27th largest country in the world with an area of around 1.1 million square kilometers (CIA 2013, KUNDELL 2012). Our study area is located in the Rift Valley around 90 km south of Addis Ababa between and around the cities of Meki and Ziway in Oromia region as detailed on the following maps.

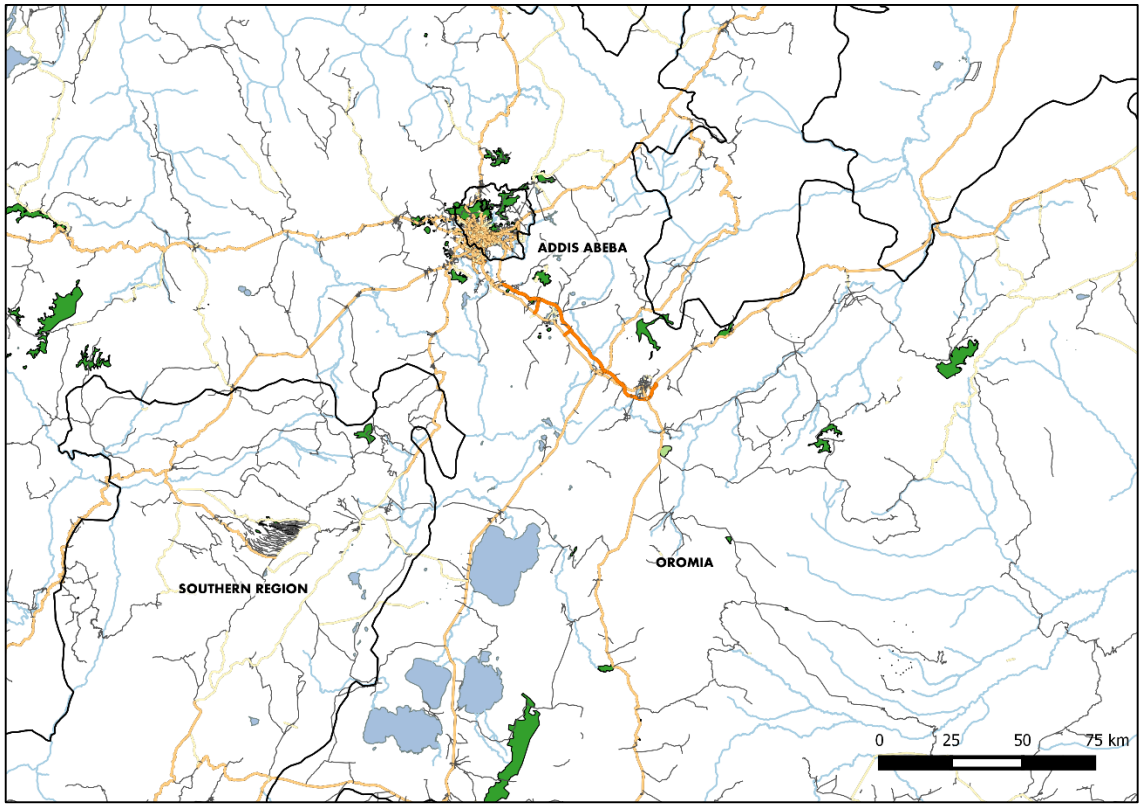

Figure 7 Overview of focus area south of Addis Ababa (own illustration)

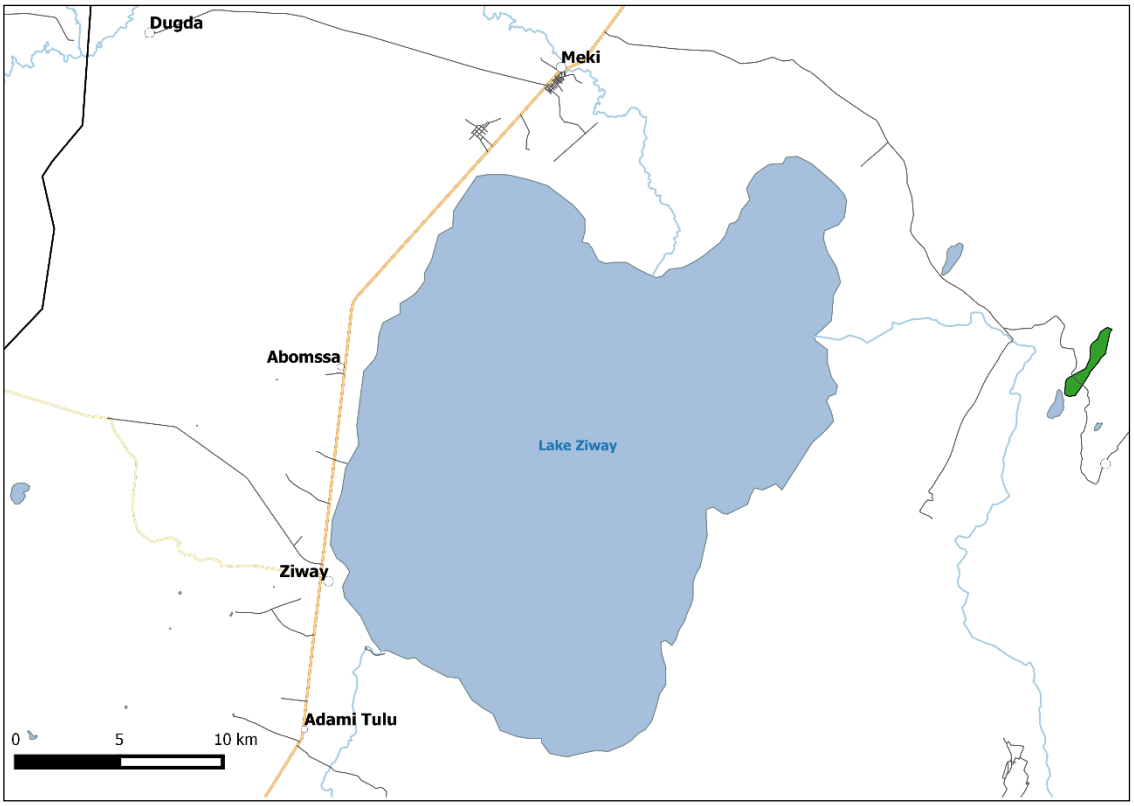

Figure 8 Detailed overview of focus area (own illustration)

4.1.1.1 Geology of Ethiopia and the Rift Valley

The country is characterized by its location on a high plateau with the Choke and Mandebo mountain ranges and a division by the Great Rift Valley. Surrounding the highland complex are low lands and tropical forest to the South and deserts and steppes to the North and East (WORLDATLAS 2015).

The Great Rift Valley, where our study area is located, is part of this world region's most prominent geological formation – the East African Rift System. It has begun to form when the smaller Somalian Plate started to pull away from the Nubian Plate that makes up most of Africa around 31 million years ago (WOLFENDEN et al. 2003). These two tectonic plates are not only moving away from each other but also drift away from the Arabian Plate in southern direction. The region where these three plates border, is a so-called triple-junction – the Afar depression in Northern Ethiopia (WOOD/GUTH 2015).

The rift itself is 3000 km long and comprises deep depressions surrounded by broad, uplifted flanks (EBINGER 2005). Most probable the system develops as heat flows from the mantle are lifting up bulges in Kenya and the Afar region. As these expand, they crack the fracturable outer crust into a sequence of normal faults displaying the classic horst and graben structure typical for rift valleys. The East African Rift Valley extends from Ethiopia in the very North over Kenya and Uganda, Rwanda, Burundi and Tanzania until

Malawi and Mozambique in the South. Geologically this world region has been and still is widely affected by volcanic activity that accompanies the process of rift formation. There are still some active volcanoes today, notably Erta Ale in the Afar Depression. Volcanic material can be found on the flanks of the rift where it is conserved and uncovered by erosion (MOUNGENOT et al. 1986, WOOD/GUTH 2015, CORTI 2015b).

The part of the rift that belongs to Ethiopia is the oldest and best defined area of the system and is referred to as the Ethiopian Rift. The Main Ethiopian Rift extends 500 km from the Afar depression at 9°40'N to the area around lakes Chamo and Abaya at 5°30'N. This is where the Ethiopian and Somalian plateaus are separated by an 80 km wide lowland, the Ethiopian Rift Valley. From the Afar region, where most parts of the valley lie below sea level, it ascends steadily until the Ziway region from where it descends again to the Turkana depression. There are some local increases in the rift's elevation due to volcanic formations and its highest elevation is 1700 m and located north of Lake Ziway between Meki and Awash rivers. The surrounding plateaus attain elevations of more than 2000 m (WOOD/GUTH 2015, CORTI 2015a).

4.1.1.2 Climate in Ethiopia

Ethiopia lies in the tropical zone and its general climate can be classified as tropical monsoon. Because of a wide range of topography and elevation between -125 m in the Danakil Desert and 4,533 m on Ras Dejen, the climate is nevertheless quite diverse (CIA 2015). In the south-eastern and north-eastern lowlands it is characteristically tropical with mean annual temperatures of 25-30°C, whereas the central highland regions exhibit much cooler temperatures of 15-20°C (MCSWEENEY et al. 2010).

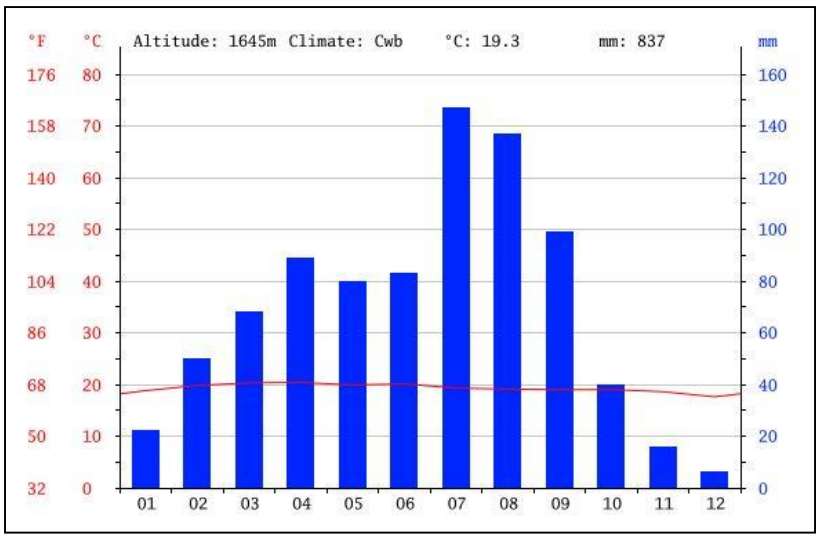

Figure 9 Climate chart of Ziway (Climate Data, 2015)

The traditional Ethiopian classification knows five climatic zones according to mean annual temperature and altitude. "Bereha", the hot and arid zone below 500 m with annual temperatures of up to 34°C, "Kolla" between 500 and 1500 m with warm to hot, semi-

arid climate and up to 28°C mean annual temperature, "Woina Dega" in areas higher than "Kolla" up to 2500 m and semi-humid, sometimes cool climate and up to 20°C mean temperatures, "Dega" between 2500-3200 m with cool to cold humid climate and 10-16°C and in the highest elevations and "Wurch" a cold and moist climatic zone in mountainous areas over 3200 m and below 10°C (ASH/ATKINS 2009).

Precipitation in Ethiopia is highly variable. Rainfall is characterized by its severity and extreme spatial and temporal volatility. This leads to a high change of annual droughts and dry spells between seasons (KUNDELL 2012). There are two distinct rainy seasons in Ethiopia, one, the short one, from March to May and the other from June to September. The short rainy season shows a spatial variation of rainfall between 178 and 358 mm and the second between 420 and 680 mm (KASSIE et al. 2013).

The Rift valley displays a variety of different climates due to differing altitudes. The study area lies at about 1840 m and displays a semi-humid and sometimes cold climate with maximum temperatures from 25 to 30°C and minimum temperatures from 10 to 20°C, rainfall is around 650 mm (HENGSDIJK/JANSEN 2006).

4.1.1.3 Agro-climatic Zones

In Ethiopia, three major agro-climatic zones can be distinguished according to water balance and duration of growing period. Firstly, the areas without noteworthy growing period and little or no precipitation in eastern, northern and southern lowlands represent one zone. Furthermore, there are areas with two distinct rainy seasons and a double growing period that can be further distinguished into two types, bimodal type 1 and 2 according to their distinctive wet periods. Areas belonging to type 1 are located in Eastern Ethiopia and have a small peak in precipitation during April and a big one in August. Type 2 areas in the lowlands of the South and Southeast have two distinct wet periods during February until April as well as between June and September with two explicit dry periods in between. Most rain falls in April and September (KUNDELL 2012).

In the study area three main seasons can be distinguished. The major rainy season ("kiremt") in summer from June to September is induced by the inter-tropical convergence zone being North of Ethiopia at that time of the year. The rain is due to monsoonal currents flowing over from South from the Indian Ocean and Atlantic. Precipitation during this season makes up 50 to 70% of the mean annual total (DEGEFU 1987). The dry period ("baga") lasts from October until February and is due to the northeasterly trade winds, the small rainy season ("belg") is induced by the Arabian high

moving towards the Indian Ocean and warm, moist air flowing over the country (LEGESSE et al. 2004 & GRIFFITHS 1972 cited in LEGESSE et al. 2004). The study area therefore belongs to bimodal type 1. The Köppen classification is Cwb – subtropical highland climate with dry winter (HENGSDIJK/JANSEN 2006).

4.1.1.4 Soil in Ethiopia

Ethiopia has many different types of soil due to its wide range of topographic and climatic factors. The Ministry of Agriculture names 19 soil types found in the country (MOA 2000). The Rift Valley's main soil types are vertisols, cambisols and fluvisols (Russel-Smith 1984). Vertisols are rich in clay, they swell when wetted and shrink when drying, their organic matter content is low as well as their permeability. Without care this soil type is usually basis for grassland and deep-rooting trees only (GRUNWALD 2007). Cambisols can be found in areas with high rates of erosion and have a high content of weatherable minerals and are usually well suited for agriculture if not limited by the terrain (ENCYCLOPÆDIA BRITANNICA 2015b). Fluvisols are influenced by high rising groundwater and/or flooding by rivers and their organic carbon content decreases with depth (ENCYCLOPÆDIA BRITANNICA 2015c).

One characteristic that is due to the strong volcanic influences is in many cases the soils' deficiency in phosphorus. Notably soils overlying ignimbrite are susceptible to serious and extensive erosion. Concerning nutrient status, many of Rift Valley's soils display micronutrient imbalances and sometimes difficult physical conditions (vertisols and saline soils). Soils derived from young volcanic origin usually display a good nutrient status, nevertheless leaching can become a problem. These attributes limit forage and crop production in the Rift Valley (Russel-Smith 1984). At national level, soil erosion is the main cause for nutrient depletion. Studies suggest that soil nutrient reserves are declining on a national level, though with a high spatial variability. In areas with intensive agricultural management like Oromia the nutrient balance is strongly negative (HAILESLASSIE et al. 2004).

Overall widespread soil degradation and lack of land management strategies is a major problem in Ethiopia. "In fact, long-term productivity losses due to soil erosion alone are predicted to reduce annual agricultural GDP by up to 3 %" (ATA 2014).

4.1.1.5 Water Resources and Use

There are twelve major river basins and four main drainage systems in Ethiopia. The most important river is the Blue Nile having its source in T'ana Hayk (Lake Tana) in northwest Ethiopia. The Nile basin covers 33 per cent of the country draining the northern and central regions. The other drainage systems are the Shebelli, the North-East Coast and the Rift-Valley drainage system covering 28% of the country. Most Ethiopian rivers are seasonal. During dry season flow originates from springs. An important element of Ethiopian nature are its wetlands who do not only serve as a source of water for rivers but also play an important role in groundwater recharge, flood retention and biodiversity. They are of critical importance for many local communities (KUNDELL 2012, CIA 2013). All Ethiopian lakes except Lake Tana are located in the Rift Valley and all except lake Ziway are saline. The study area's lakes Ziway and Langano are primarily supplied by rivers emanating in the surrounding highlands. Lake Ziway's fresh water originates from Ketar and Meki river and from rainfall. These two rivers are perennial but their base flows have decreased due to uncontrolled water withdrawal for small-scale irrigation in the catchments' upper reaches. Lake Langano and Lake Ziway are open lakes and overflow through Bulbula and Horakelo rivers respectively into Lake Abyata (HENGSDIJK/JANSEN 2006, KUNDELL 2012).

4.1.1.6 Irrigation

Agriculture is by far Ethiopia's biggest water user with an estimated 5.2 km³ of water withdrawn per year, domestic use is around 0.33 km³ and industrial only around 0.02 km³. Growing conflict between environmental protection and agriculture is inevitable. In some areas river's whole base flows are redirected for irrigation, leaving no water for ecological conservation. This is particularly the case in lowland rural areas (KUNDELL 2012).

Figure 10 Furrow Irrigation of Smallholder Farmer in Meki Area

Estimates concerning Ethiopia's maximum irrigation potential range from 3.6 to 5.7 million ha but taking into account availability of water and land resources as well as financial possibilities and technology, the FAO estimated the irrigation potential at around 2.7 million ha (FAO 2015e). According to WORQLUL et al. (2015) only 5 per cent of agricultural land was irrigated in 2014. Still, irrigation has a long history in Ethiopia dating back several centuries and advanced irrigation techniques were introduced in the 1950s by a Dutch company. Nevertheless, a number of irrigation schemes are not working efficiently and do not fulfill their potential. Reasons are manifold and comprise water shortages, poor management and broken constructions (KUNDELL 2012).

The FAO distinguishes four different categories of irrigation schemes:

- Traditional schemes that are constructed by farmers themselves without professional assistance and on their own initiative. Sizes of these schemes vary widely between 1 ha until up to 100 ha. Traditional schemes are especially found in peri-urban areas and they mainly produce vegetables for local markets.
- Modern irrigation schemes on a small scale producing on up to 200 ha and who are usually built by NGOs or the government.
- Modern private irrigation schemes that are financed by private investors and are often found on former state farms.
- Public irrigation schemes usually have a size of 200 to 3000 ha, that are in the best case built, owned and run by public enterprises. Many schemes along Awash River are of this type.

The Rift Valley is the major region for irrigation in Ethiopia, 62% of the area adequate for irrigation can be found, 29% in the Nile basin (KUNDELL 2012, MORGES/GEBREGIORGIS 2013).

Figure 11 Drip irrigation system at the commercial farm VegFru in Meki area

Although not known definitely, studies on groundwater potential range between 2.6 – 13.5 and 12.7 billion cubic meters, while the recharge ranges around 36 billion cubic meters per year due to precipitation and surface water. Only a small part of groundwater has been developed and is primarily used for local water supply (GEBRESELASSIE 2014, DINGAMO 2008). Groundwater development requires high investment and running costs (KUNDELL 2012).

But also wastewater treatment is underdeveloped and posing huge problems on sustainable development in Ethiopia. Only 4.5% of population has access to improved private sanitation and the impact of open discharge of graywater is immense. Soil and water are contaminated and cause for diseases. Traditional treatment systems have to be changed to closed-loop urban wastewater system based on water conservation and nutrient resources (MOWIE 2015).

Another major problem in Ethiopia is flooding due to strong rainfall notably along Awash River. It threatens crops and infrastructure alike, dikes do exist but do not represent a sustainable solution (KUNDELL 2012).

4.1.1.7 Flora

There are four Biomes in Ethiopia – savanna, tropical thickets and wooded steppe, montane vegetation and desert steppe vegetation. The savanna is typical for the wet parts of the Western highlands and is characterized by dense forest and rich undergrowth, tropical dry forest is mixed with grassland in sections with less rainfall. These formations can be found at lower elevations in the Western and Eastern highlands. At higher altitudes of these highlands montane and temperate grassland can be found representing the montane biome. Desert steppe vegetation covers parts of the Denakil Plain while tropical thickets and wooded steppe can be found in the Rift Valley and Eastern Lowlands (ENCYCLOPÆDIA BRITANNICA 2015). In our study area the dense woodland has been transformed to farmland with scattered trees. These trees are mainly acacias like Acacia

Figure 12 Agrarian Landscape in Meki Area

Ethiopia's diverse nature is home to many different plant and animal species, many of them endemic. According to the NABU (2014) "Ethiopia is a globally significant biodiversity hotspot and is considered to be one of the world's most species-rich countries".

4.1.2 Economic Environment

In this section, we give an overview of the Ethiopian economy and its sectors and provide some information on Ethiopia's foreign trade, the country's infrastructure and particularities of the study area.

In 2014, Ethiopia had a gross domestic product (GDP) of 54.80 billion US dollars, which corresponds to 565 US dollars GDP per capita. With a growth rate of 10.3% compared to the year 2013, economic growth in Ethiopia is among the highest worldwide (WORLD BANK 2015). It is attributed to the strong commitment by the government towards

economic growth and heavy public investments in infrastructure. However, in absolute terms, the economic growth is quite low and the economic development is not evenly spread among different socioeconomic groups in the country, which is noticeable when looking at the country's rank in the Human Development Index (HDI): Ethiopia ranks 173rd out of 186 countries. (UNDP 2015a, ZERIHUN WONDIFRAW et al. 2015)

Sector	**Share of GDP** (2014)	**Sectoral Employment** (2013)
Agriculture	42.3 %	72.7 %
Industry	15.4 %	6.9 %
Services	42.2 %	20.4 %

Table 4 Share of GDP and employment per sector (World Bank 2015, CSA 2014)

Economic sectors

Table 4 illustrates the shares of GDP and employment per economic sector in Ethiopia.

The contribution of agriculture to GDP has decreased over the last decade. However, it remains the most important economic sector in Ethiopia. The majority of the population depends on this sector and it is predominantly subsistence-based (UNDP 2015a). According to the latest National Labour Force Survey of the Central Statistical Agency (CSA), more than 70% of the employed population are working in agriculture. In rural areas, the percentage even exceeds 80% (CSA 2014). Furthermore, agricultural products account for around 70% of total export earnings (ZERIHUN WONDIFRAW et al. 2015, CIA 2015).

The Ethiopian government declared agriculture as key sector for achieving the goal of becoming a middle-income country by 2025, implemented the Agricultural Development Led Industrialization (ADLI) strategy and built the Ethiopian Agricultural Transformation Agency (ATA). The latter is concerned with the transformation of the agricultural sector from subsistence-based to market-oriented commercial farming (ATA 2014) (see also chapter 4.1.3).

Compared to the agricultural sector, the share of the industrial sector in GDP is quite low in Ethiopia. It comprises the following sub-sectors: construction, manufacturing, electricity and mining. Among these, the construction and manufacturing sub-sectors are the most important ones and account for the major part of growth in this sector, e.g. because of huge investments in construction (GEBREEYESUS 2013). The manufacturing industry such as food processing, beverage production, textile and leather production is considered to enable economic growth and employment creation. This is why the

Ethiopian government declared this sector (in addition to agriculture) as a key sector in its socio-economic policy. (UNDP 2015a, CIA 2015)

Although the Ethiopian government is mainly focusing on the industrial and the agricultural sector, the service sector creates a major part of GDP and is the main driver for the economic growth in the last decade. The sector comprises wholesale and retail trade, finance, insurance, telecommunications and airline services. (UNDP 2015a, CIA 2015)

Foreign trade

According to the National Bank of Ethiopia (NBE), on the one hand, Ethiopia exported goods and services amounting to 6,437 million US dollars in 2013/2014. As mentioned above, main export earnings come from agricultural products of which coffee and oilseeds are the most important ones. Further relevant export goods are gold, flowers, chat, pulses, live animals as well as leather and leather products. Main export destinations are Asia (China, Saudi Arabia and Japan) as well as Europe (Germany, Switzerland and Netherlands). On the other hand, Ethiopia imported goods and services amounting to 16,345 million US dollars. Major goods imported were industrial capital goods such as metal and machinery, transport capital goods such as road and motor vehicles, petroleum products and consumer goods. As Ethiopia imports more than it exports, the trade deficit accounts for 9,908 million US dollars (NBE 2015a, NBE 2015b). This trade deficit decreases foreign exchange reserves and increases external debt. In order to reduce this trade deficit, FEYISSA and GAROMSA (2011) recommend two options: Ethiopia could either export more high value-added (manufactured) goods instead of unprocessed goods or substitute imported goods by national manufactured goods.

Infrastructure

Recognizing the importance of an improved infrastructure for economic development, the Ethiopian government has invested heavily in transportation, telecommunication and energy infrastructure. However, the quality of the country's infrastructure is rather poor. According to FOSTER and MORELLA (2011) the main infrastructure challenge of Ethiopia is related to the power sector. The increasing demand for energy exceeds by far the current capacity of power plants. Moreover, the deficient ICT infrastructure in Ethiopia hampers further development. Another problem is the road network. Although the capital is well connected to other Ethiopian cities and with international border crossings, the road

accessibility in rural areas is quite low: Only 10% of rural inhabitants can approach an all-weather road within 2 km. Moreover, the only rail service of the country, connecting Addis Ababa and Djibouti, has been out of service for a long time. It is likely that the new railway connection constructed by two Chinese companies will start operating in 2016 (VAUGHAN 2013).

Particularities of the study area

As in other parts of Ethiopia, the majority of the people, living in the focus area of our study, depend on agriculture. However, as described in chapter 4.1.1.5 and 4.1.1.6, the Central Rift Valley (CRV) is rich in water and therefore allows irrigated agriculture. This is why the area is of great economic importance. Both smallholder farmers and large-scale companies use the water resources in floriculture (mainly for export), horticulture and viticulture. As these subsections are rather labor-intensive, they create many employment opportunities in the region. (SCHOLTEN 2007, HENGSDIJK/JANSEN, ISLA 2015)

4.1.3 Political Environment

The Federal Democratic Republic of Ethiopia (FDRE) is a federal and multi-party democracy. In this governance structure the legislative authority remains with the government led by an executive prime minister and the two houses: The House of People's Representatives (547 members) and the House of Federation (112 members) which are elected every five years. The elections take place on national and federal level, down to the lowest administration level of the *kebeles*. The members of the House of Federation are elected by the nine Regional State Councils and represent at least one deputy of each Ethiopian ethnic group. The prime minister is chosen by the governing party while the president is elected by the members of the House of People's Representatives. These positions are currently hold by Dr. Mulatu Teshome (president) and Hailemariam Desalegn (prime minister). The nine administrative areas are the regional states Tigray, Afar, Amhara, Oromia, Somali, Benishangul-Gumuz, Southern Nations Nationalities and People Region, Gambella and Harari Regional States and the two cities Addis Ababa and Dire Dawa. They are further divided into smaller administrative areas of 800 districts (*woredas*) and around 15,000 neighborhoods (*kebeles*). The seat of the federal government, the House of Representatives and the House of Federation are in the capital city Addis Ababa, which is the largest city and center of commerce and industry of Ethiopia (MFA 2015).

Historic Development

There have been several violent transitions in the political history of Ethiopia. Modern Ethiopia can be traced back to the mid-1800s, when Emperor Tewodros II defeated several regional princes and united their conquered territories to a Monarchy. The successors of Tewodros II, Yohannes IV and Mendelik II, managed to conquest additional areas and expanded the Ethiopian Empire. In the 1930s the Emperor Haile Selassie centralized the state apparatus and Ethiopia endured an Italian occupation. In the 1960s and 1970s the Ethiopian population started to turn against Haile Selassie. A big famine and the world energy crisis in 1973 increased the mistrust in his regime. That supported the Marxist military junta, named Derg, to take over political power in Ethiopia. Head of the Derg was Mengistu Haile Mariam (LYONS 2011), under his leadership all land, financial institutions, private enterprises, agricultural production and markets were nationalized (INTERNATIONAL CRISIS GROUP 2009). The Derg regime ended 1991 with an insurgency of the EPRDF and the TPLF. The EPRDF is a 1989 formed coalition consisting of opposition groups, brought together under the leadership of the FPLF (LYONS 2011). This newly formed party started to transform Ethiopia into a Federal Democratic Republic and redefined citizenship, politics and identity on ethnic grounds (INTERNATIONAL CRISIS GROUP 2009).

Federal Democratic Republic of Ethiopia

In the Constitution of 1994 ethnofederalism is codified and the Ethiopian state is decentralized into the nine ethnically defined regions and two administrative cities. The regional states are governed by executive councils, which have legislative and executive power and autonomy, as well as the right to secede. The autonomy of the legislative and executive power extends through the lower levels of *woredas* and *kebeles*. The regions rely on the central government in the capital city Addis Ababa for legitimacy, security and resources, but often they have their own security force and partly political autonomy (LYONS 2011, MFA 2015). Though uncontested elections and other tactics the EPRDF consolidates the authority within Ethiopia. The EPRDF has the power across all levels of government and society. Between 1995 and 2000 most opposition parties boycotted the elections but 2005 was considered to be the first competitive election (LYONS 2011, INTERNATIONAL CRISIS GROUP 2009). The 2005 election was again won by EPRDF, but followed by public protests indicating election fraud. The demonstrations were brutally suppressed and government opponents were charged with crimes. New laws restricting

political opposition parties, independent media and civil society followed. The next local elections in 2008 and national elections in 2010 were won by the EPRDF again, while the political opposition parties were effectively oppressed (LYONS 2011). Hence, Ethiopia is considered an increasingly effective authoritarian regime without free political action. The opposition coalition lacks leadership, power and cohesion (LYONS 2011, INTERNATIONAL CRISIS GROUP 2009). In the last general elections in 2015 the FPRDF and its allies won 546 seats in the House of People's Representatives and nearly all seats in the regional state councils (NATIONAL ELECTORAL BOARD OF ETHIOPIA 2015).

4.1.4 Agricultural and Land Use policies

4.1.4.1 Agricultural Policies and related Policies

The Ethiopian government defines the agricultural sector as important for the aspired development and growth of the country. Therefore the government decided on a broad and consistent set of policies and strategies for this sector (MOFED/MOARD 2010).

- The **Ethiopia's agricultural sector policy and investment framework** (PIF) determines and ranks profitable investments and assesses the required budget for the Ethiopian government and its development partners. The PIF is led by the MoARD and the prioritization of investments reflects the interests of government and stakeholders within the development and agricultural sector. The PIF is a road map for the agricultural and rural development for the years 2010 – 2020 (MOARD 2010).

The goal of becoming a middle income country by 2020 comes in line with the PIF and six other policy and strategic statements:

- **The Comprehensive African Agricultural Development Program** (CAADP) **Compact** is an initiative of the African Union's New Partnership for Africa's Development (NEPAD) Planning and Coordinating Agency. The targets are to eradicate hunger and reduce poverty through agriculture and to establish sustainable socio-economic growth in Africa (NEPAD 2003).
- The important economic policy **ADLI**, already mentioned under 4.1.2, focuses on the improvement of agricultural extension services, the improvement of water and land use, an increased access to financial services and markets and on developing rural infrastructures (MOFED and MOARD 2010). Moreover, features as diversification of products to commercialize smallholder agriculture, shifting to higher crops with higher value and an increase of production of niche high-value export crops are included. Further, ADLI deals with the development of large-scale commercial agriculture, the

integration of producers with markets and takes into account the different agro-ecological zones and their needs (MoARD 2010)

- The **Rural Development Policy and Strategies** (RDPS) try to support agricultural development through ensuring growth, enhancing benefits, develop a market economy and eliminate food aid dependency. The strategies shall strengthen human resources capacity and utilization, ensure thoughtful allocation and land use, the specialization, diversification and commercialization of agricultural production, integration of development activities between sectors and creating agricultural marketing systems (MoFED/MoARD 2010).
- The goal for the **Plan for Accelerated and Sustained Development to end Poverty** (PASDEP) is to improve implementation capacity, increase economic growth, manage the growing population, unleashing the potentials of Ethiopia's women, promote infrastructure, develop human resources, manage risk and volatility and to establish employment opportunities till 2010 (MoFED/MoARD 2010).
- The eight **Millennium Development Goals** (MDG) range from halving extreme poverty rates to ensuring environmental sustainability and promoting gender equality.
- The **Five-Year Growth and Transformation Plan** (FYGTP) for 2010/11 to 2014/15 fulfills the PASDEP and the former FYGTP. The objective is to reach all MDG as well as democratic governance and institutions. As the plan describes agriculture as driving force to reach this objective best agricultural practices and an expansion of the agricultural sector are targeted (MoFED/MoARD 2010, p. 2). The goal of increasing private investments in Ethiopia will be further described in sub-chapter 4.1.4.3 – "Land Investment policies in Ethiopia and Oromia state".

Other agricultural related policies are:

- Ethiopia Agricultural Growth Programme (AGP) which is a part of the FYGTP and aims to develop rural infrastructure and support for water management and irrigation systems to support small-scale farmer. Besides, the program tries to promote well-coordinated donor support for agriculture, policy dialogue and more systematic monitoring and evaluation (MoFED/MoARD 2010).
- Natural Resource Management is a key issue for Agriculture and Rural Development and is addressed under the CAADP with the promotion of more sustainable methods for productivity enhancement. Moreover, there is the Sustainable Land Management Project (SLMP) with the priority to reverse long-term deterioration in soil fertility,

prevent soil erosion and rehabilitation of watersheds (MoARD 2010). Additionally the government identifies land administration and land use planning as important issues in an Ethiopia Land Administration and Land Use Development Project (ELALUDEP) (MoARD 2010).

- The National Action Plan on Gender (NAPG) is necessary for economic growth and social development, as half of the working force is female. The plan was formulated to improve the conditions for women, for example with laws to protect their rights. The aim is to increase female education, to improve access to water supply and sanitation, to focus on services for mothers and women's health, and to adapt agricultural programs and training for women to remove gender disparity (MoARD 2010).
- The Economic Growth Corridor strategy
- The Industrialization Development Strategy
- The Water Sector Strategy and the National Nutrition Policy
- The Disaster Risk Management and Food Security (DRMFS)
- The Household Asset Building Program (HABP)
- The Food Security Program (FSP) (MoARD 2010)

Agricultural sector institutions

Whilst Ethiopia has a set of policies and strategies for the agricultural sector, the institutional capacity to implement these is generally limited. There are seven categories of agricultural sector institutions: government institutions (on federal, regional and *woreda* level), mass organizations, private institutions, civil society organizations, including cooperatives and farmer organizations, donors, UN and CIGAR-affiliated institutions.

On federal and regional level agricultural research and extension institutions are critical in the implementation of agricultural policies and strategies. Ethiopia has developed the National Agricultural Research System (NARS), including the Ethiopian Institute for Agricultural Research (EIAR), Regional Agricultural Research Institutes (RARIs) and several affiliates of the CGIAR. To further strengthen the agricultural research the Ethiopian government developed partnerships with universities and colleges all over Ethiopia. A major element of the agricultural and rural development is the agricultural extension system (MoARD 2010).

4.1.4.2 Extension System

Ethiopia is one of the few countries in SSA that has consistently been investing in agricultural extension. Due to Ethiopia's history regarding hunger and famine and the agrarian nature of the country, food security is very important to the EPRDF. Agriculture is an important policy area and accounts for 15% of the government expenditure. Part of the national agricultural policy is an ambitious training programme for extension workers, with the objective to employ three extension workers, also called 'Development Agents (DA's)' in every *kebele* in the country, with additional agents working across *kebeles*. This caused the number of extension workers in the country to increase from 2,500 in 1995 to over 45,000 in 2009 (BERHANU/POULTON 2014). Ethiopia has an established network of Farming Training Centers (FTC), numbering over 8,000 at the *kebele* (or village) level. These centers are staffed by Development Agents that provide farmers with new information, training, and demonstrations to encourage best farming practices (IFPRI 2011). Extension services provided at FTCs range from capacity development on use of improved farming technologies (e.g. improved seed production techniques, improved agronomic practices, integrated pest management, animal husbandry and agroforestry, etc.) and providing market-oriented information and communication and advisory services. In addition to providing information and improving communication and capacity development activities, the agricultural extension services at the FTCs will help in linking farmers with institutional support services such as input supply, credit, cooperative promotion and development offices and marketing services (LIVES 2015).

A strength of Ethiopia's extension services is the extensive network the country has established. Materials and funding for the FTC's are provided by the government as well as by external donors, and local farmer communities help with the building of the training centers. FTC staff is educated in the country, there is sufficient staff available and they have strong technical skills and knowledge (IFPRI 2010). The figures suggest that extension services contribute to yield, income and food security: Farmers in Ethiopia that receive extension services are approximately 9% more likely to be food secure. Extension services also provide a higher production and income for farmers (IFPRI 2011, BERHANU/POULTON 2014). Also, IFPRI (2010) found willingness amongst farmers to change their way of production and they see FTC's as a source of knowledge, which suggests that extension services contribute to the demand of knowledge services by farmers.

There are downsides of the Ethiopian extension service system as well. Though funding and material is provided for, most centers still lack the resources to effectively teach farmers to improve their practices, such as demonstration sites and equipment, or basic inputs that are needed to demonstrate production techniques. The DA's that instruct farmers often have limited knowledge of vegetable production, or sometimes lack crucial skills and training and have limited access to modern agricultural knowledge and production techniques (LIVES 2015). Also, LIVES (2015) observe that there is a high staff turnover. Furthermore, DA's mainly consider their task as distributing fertilizers and giving credit to farmers, undermining the training and provision of technical advice. At the same time, though, these tasks go more and more to cooperatives, giving time to DA's for training and advice (BERHANU/POULTON 2014). Another pitfall is the hierarchical system. The top-down approach of extension services in Ethiopia hinders the establishment of an effective demand-driven extension system. Lack of coordination among institutions carrying out these services has led to fragmented interventions, undermining the success of agricultural extension in Ethiopia (IFPRI 2011). In some cases, FTC sites are even used as storage for crops and other materials, or serve as a source of income for the DA administration instead of as a 'centre of participatory extension delivery' as intended. The last threat to the effectivity of the extension system in Ethiopia is the use of extension services to exercise political control in Ethiopia's rural areas. DA's are found to be selected based on their loyalty to the EPRDF, and to treat farmers in their *kebele* likewise. DA's might also have administrative tasks besides their extension tasks, such as tax collection, which undermines the quality of the extension services as well (BERHANU/POULTON 2014).

4.1.4.3 Land Tenure System in Ethiopia and Oromia State

According to the constitution, all land in Ethiopia is state-owned. Land users can get user rights, which allows them to transfer land rights and assets and which gives them the right to compensation in case of expropriation. The Ministry of Agriculture and Rural Development is the government department that has the mandate over land use in the country. They issued the "Federal Rural Land Administration and Use Proclamation", which redistributed some of the responsibilities to regional states. Regions, such as Oromia, are allowed to develop their own laws regarding land use and to administer their lands. In practice, rural land administration and land use policies are carried out at the *woreda* (district) and *kebele* (village) levels (THE OAKLAND INSTITUTE 2011). Besides

administration based tenure, there is also a market-based land tenure, as well as customary tenure present in the country. According to THE OAKLAND INSTITUTE (2011), there is increasing recognition of pastoralist right, such as arrangements for common access to grazing areas.

Oromia is one of the states in Ethiopia that has its own land use laws. The regional land certification process in Oromia is stated in Proclamation 56/2002 and the formal registration process started in 2003. When land is registered, a green booklet is issued, with one photograph of the head of the household, usually male. There is no plot map or a sketch of the land that is registered. The cost of registration is 5 Birr (DEINIGER et al. 2008). Despite land registration in the Oromia region, remote areas such as pastures and grazing lands are often not registered and, therefore, very vulnerable for investments by domestic or foreign companies (HORNE, 2011, VHUGHEN/GEBRU 2013). Although land redistribution by the government is allowed in some regional states, it is not permitted in Oromia (THE OAKLAND INSTITUTE, 2011). Still, the government is allowed to rent out land held by farmers for the sake of public uses. In this case, farmers have the right to compensation of land or rehabilitation. (OROMIA PROCLAMATION 56/2002).

4.1.4.4 Land Investment Policies in Ethiopia and Oromia State

One of the goals in the Five Year Growth and Transformation Plan of Ethiopia is to increase private investments. Investment in the agricultural industry plays an important role: the government wants to offer over 8 million acres of land for rent to commercial farming investors. The idea behind it is that this will boost the agricultural industry with advanced farming technologies, high value and high yield crops, and improved inputs as well as increased use of bio-chemicals. Ethiopia is especially interested in commercial investors in high-value horticultural and floricultural products (MOFED 2010). The rewriting of the Ethiopian constitution in 1995 made the leasing of land by the government legal (THE OAKLAND INSTITUTE 2011). Proclamation 280/2002 and subsequently amendments in 375/2003 are the main legislation regarding land investments in Ethiopia. The objectives of investment include increase of foreign exchange earnings by encouraging growth in export industries and transfer of technology. Interestingly, it also suggests in Section 35(1) that regional governments shall give priorities to approved investment in their policies (THE OAKLAND INSTITUTE 2011).

In Oromia, an investment permit can be issued to an investor to establish a new enterprise or to expand or upgrade an establishment that already exists. According to the Investment Proclamation No.280/2002, a foreign or domestic investor who has the right requirements should be allowed to obtain an investment permit to invest in Ethiopia. An investment permit can be obtained in one of the following ownership forms: Sole proprietorship, business organization incorporated in Ethiopia or abroad, public enterprises, and cooperative societies (OROMIA INVESTMENT AGENCY). Investors are allowed to hold rural land on a lease basis or a rent basis for a minimum of 20 to a maximum of 45 years. According to national law, the financial requirement is an investment capital of 100,000 USD (MOFED 2010, THE OAKLAND INSTITUTE 2011). Investors in land have the duty to conserve the land accordingly and to plant indigenous trees on at least 2% of the land. The investor has also the duty to use the land in such a way that the natural resources in the surrounding are protected (OROMIAN LAND USE ACT).

4.1.5 Social and Cultural Environment

Demography, Ethnicity and Religion

Ethiopia is a big state with a large and very young population. Numbers about its population size vary according to different sources between 90 and 100 million inhabitants, the UNDP states in its country profile for Ethiopia a size of 94.1 million inhabitants (UNDP 2015). With over 50% of the Ethiopians being younger than 18 years (median age: 18.62 years) and an annual population growth rate of 2.6% between 2010 and 2015 the country is still growing rapidly (UNDP 2015). Ethiopia is a multi-ethnic state with more than 80 different ethnic groups and around the same amount of spoken languages. The two biggest ethnic groups are the Oromo (34.5%) and the Amhara (29.6%) (GIZ 2015). While the Oromo as largest group constitute of around 25 million people there are also numerous small ethnic groups as for example the Mursi,

Figure 13 Ethiopian children during an orthodox holiday in Lalibela

with only a few thousand members (GIZ 2015). The ethnic diversity is reflected in the governance structure as the nine federal districts in Ethiopia represent the different ethnic groups (GIZ 2015). The official language is Amharic which is spoken by 27 million people as first language, followed by English as second official language. In addition there are over 70 officially recognised regional languages such as Oromo, Tigrinya and Somali (ETHIOPIAN PARLIAMENT 2015).

Religion plays a very important role in Ethiopia. The two largest communities of faith are the ethiopian-orthodox Christians (around 43%) and the Muslims (most of them Sunnite) (around 34%). The rest of the population belongs predominantly to some other Christian religions or traditional religions. The peaceful coexistence of the diverse communities of faith is remarkable and only disturbed by minor incidents of a small fundamental (Christian as well as Muslim) minority. (GIZ 2015)

Gender

The Ethiopian Constitution guarantees strong women rights. In Article 35 it states that "women shall, in the enjoyment of rights and protections provided for by this Constitution, have equal right with men." (The Federal Democratic Republic of Ethiopia 1995, p.10). The Constitution further grants women equal rights as men regarding their status in marriage and their legal ability to acquire, administer, control, use and transfer property. It is emphasized that this concerns especially the use, transfer, administration and control of land including the inheritance of property. Furthermore, women and men have the same legal right to participate in political, social and economic life as well as in public and private institutions. Both sexes shall be treated equally in terms of employment, promotion and payment. Women have the right to obtain paid maternity leave, including parental leave. The Constitution also legally bans customs and practices, which endanger the physical or mental health of women. Further women are granted specifically the right of access to family planning education, information and capacity to prevent harm arising from pregnancy and childbirth (The Federal Democratic Republic of Ethiopia 1995).

While these laws represent a good achievement in theory, Ethiopia is still far away from achieving gender equality in practice (UNDP 2015). Many Ethiopian women face discrimination, paternalism, very strong traditional role concepts and often (domestic) violence in their daily life (GIZ 2015). Around 85% of the women live and work in rural areas in small communities, where they are engaged in subsistence farming activities.

These activities include hard physical work as collecting firewood and transporting it over long distances (GIZ 2015). Women are still disadvantaged in terms of rights of possessions and titles, especially in access and right to land. Around 28% of the Ethiopian households are headed by females, most of them in urban areas. Women from female headed households, as well as from male headed households, still don't have the same access to productive assets and other resources as men (UNICEF 2012). Many women in urban areas have regular jobs, but still face discrimination regarding payment and the chances to achieve higher positions (UNICEF 2012). Women are not represented in politics the same way as men are, but their participation is growing. In 2014 27.8% of the seats in the national parliament were held by women and 13% of the cabinet ministers were female (UNICEF 2012).

Despite of being legally forbidden genital mutilation is still a widespread practice especially in the rural areas. In 2007 about 45% of all Ethiopian women between 15 and 49 years were circumcised. The new Federal Family Code based on the principle of gender equality was introduced in 2000 and raised the legal age for getting married to 18 years (UNICEF 2012). Nevertheless, marriage of underaged and often very young girls is also still a common practice (GIZ 2015).

Women´s role in the agricultural value chain

Research about the participation of women among the value chain of vegetables in Ethiopia mostly focus on the production on smallholder level. Women´s contribution as labor to the production on large scale level or to the value addition in form of processing of vegetables is rarely considered in literature. Only in regard to the role of women in trading and marketing issues we could test our own findings with already existing data.

Many studies indicate that women in Ethiopia play a major role in agricultural production and income generating activities (GEBREMICHAEL 2008, OGATO et al. 2009). Their contribution to constructive activities such as farming is significantly higher than by men. Women are usually also in charge of almost all household related work, such as cooking and cleaning giving them a double-day role and a much higher workload than men (OGATO et al. 2009). Nonetheless, due to the existing state of gender relations and socio-cultural differences, Ethiopian women and men have different access to critical economic resources such as land, livestock and labor which women are mostly lacking from.

To analyze gender differences in rural Ethiopia one has to distinguish between male headed households (MHHs) and female headed households (FHHs), whose economic and

social status differs a lot (ELIAS et al. 2015). These differences exist also between women in FHHs and women in MHHs (TIRUNEH et al. 2001). ELIAS et al. (2015) assert that FHH in average are less educated, own less land and assets and are also disadvantaged in terms of labor forces due to generally smaller household sizes than MHH. The average land size held by women in 2009/2010 was 0.68 ha for women while men had an average size of 1.11 ha. (UNICEF 2012).

The productivity of vegetables production in female headed households is significantly lower than in male headed households (GIZIEW et al. 2014, GEBREMEDHIN 2009 in GIZIEW et al. 2014, GIZ 2009 in GIZIEW et al. 2014). There are several reasons which favor the production efficiency of men: GIZIEW et al. (2014) found out that family members in MHHs usually had younger age, better experiences in vegetable farming and better access to all kind of social organizations than the FHHs. In addition, men get easier access to credits and market information in general. Extension services are much more likely to address men than women, who are often by-passed by extension workers (GIZIEW 2014). Female headed households are even more burdened within the production of vegetables compared to women in MHHs, because all of the different responsibilities in the household, in the field and the off-farm income generating are on their shoulders only (OGATO et al. 2009).

In rural Ethiopia gender division of labor in agricultural production within a household depends on different aspects. It varies in terms of the crop, the farming system, the available technology as well as in regard to the wealth status and cultural background of the household (OGATO 2009). In vegetables production weeding in particular is seen as a women activity, but also harvesting, post-harvest handling and marketing are typically carried out by women (RANJAN/HEDIJA 2004 cited in GEBREMICHAEL 2009, OGATO 2009). However preparing the land and distributing of water is rather at the responsibility of the men (SAMBROOK 2004 cited in GEBREMICHAEL 2009) even though this counts only for land preparation by oxen while doing it by hand is still considered as women task (OGATO 2009). The studies of GEBREMICHAEL (2009) and Elias et al. (2014) also indicate that female headed households are involved in almost all activities in the value chain procedures except plowing, which is culturally considered as men's duty whereas women in MHHs are only involved in 40% of the activities such as seedling management and selling, guarding, harvesting, grading, retailing and selling of products. For general agricultural value chains it can be stated that men are more likely to accept responsibilities when there are technical resources available (OGATO 2009).

The more valuable a crop becomes in the market, the less women´s controlling power over this crop becomes (BISHOP-SAMBROOK cited in GEBREMICHAEL 2009). While the sale of products in general is more a male task, the decision-making regarding marketing within a household can be a common activity of men and women. However, in Ethiopia traditionally the wives are responsible for decisions regarding consumption, while the husbands make production and marketing decisions (SULEIMAN 2004) for instance about agricultural inputs (TIRUNEH et al. 2001). But even though women can play an important role in background decision-makings, the transfer and adoption of agricultural technologies in Ethiopia is very much affected by who owns, manages and controls the productive resources. As heads of households, women directly participate in agricultural product- and input-markets and make household level decisions about how to adapt to price changes - this is not the case for women in MHH (SULEIMAN 2004).

In the area of trading and marketing of vegetables women´s share in retailer positions is greater than 80 percent whereas wholesaler positions are mostly found to be filled by men (GEBREMICHAEL 2009). This difference in the status of participation between women and men is seen to be a matter of the greater financial capacity of men to rent storage and to buy large amount of vegetables compared to women (OGATO 2009). If women are found at the wholesale level, they have considerably lower marketing experiences, worse access to market information and are less involved in social organizations than men in the same position (GIZIEW et al. 2014). Additionally women in wholesalers position are usually lower educated than men in the same position (GIZIEW et al. 2014).

Women´s role in the horticultural value chain

- On small scale production level women play a major role in almost all activities
- Involvement in farming activities and decision making power differs a lot among women in MHH and FHH
- Women are generally disadvantaged in access to resources like land, credits & extension services
- On trading level women are mostly found in retailer positions while wholesaling is dominated by men

Education

The Ethiopian education system constitutes of ten years of general education, followed by two years of either preparation for college or vocational training (GIZ 2015). The expected years of schooling in 2013 was 8.0 years for girls and 9.0 years for boys, while actual mean years of schooling was at 1.4 years for girls and 3.6 years for boys (average 2.41 years). The average primary school dropout rate was about 63.4% (UNDP 2015).

The situation in rural areas differed substantially from the situation in cities, where especially children from the developing middle class attend school far longer than their classmates from the countryside. Girls attend school not as often as boys, due to social role expectations (why send a girl to school if she is going to be a wife doing the housework later?) and financial reasons. If a family cannot afford to send all their children to school it is normally the girls who remain at home. The gap between the number of boys and girls attending school increases at each step of the school system (UNICEF 2012).

Since the 1990s the access to education has been significantly improved, from 1990 to 2009 the number of children attending school has risen from 3 to around 15.5 million pupils. The number of students in secondary education has increased strongly as well. The average amount of adults older than 25 years with at least some secondary education is about 12.5% (females 7.8%, males 18.2%). The average literacy rate for people older than 15 years is around 39% (UNDP 2015). In recent years the number of universities has increased considerably (22 public, one private), but only three percent of all Ethiopians are going to university. A big problem is that many qualified young people leave the country to study and work abroad. In 2012 nearly half of the students at Ethiopian universities were female (46%), but they still quit university far more often than their male colleagues (GIZ 2015).

The Ethiopian Government spends around 4.7% of its GDP on expenditures in education. According to official numbers in 2009/2010 93.4% of all Ethiopian children were enrolled in schools (UNDP 2015). These numbers hide the fact that there is still a high percentage of students who don’t attend regularly (for example in harvesting times) or who drop out of school before obtaining any degree.

Health

The health care system in Ethiopia is despite constant improvement still very poor. For 33,500 people only one doctor is available, even though the government is highly

investing in the education of doctors and medical personnel. Only a small part of the population has access to medical care for which people have to cover mostly large distances. The state of public health is better in the cities (GIZ 2015). Birth rates, infant mortality rates, and death rates are lower in cities than in rural areas, due to better access to education, medicines and hospitals. In general there is still a huge lack of sanitation, hygiene and access to clean drinking water all over the country.

Life expectancy at birth is 64 years (UNDP 2014). Many people are suffering from diarrhea and among children this is even the main cause of death. In addition AIDS/HIV in Ethiopia is still highly widespread. Depending on the region the assumed prevalence of HIV infections ranges between 1.1 and 1.4% among the 15 to 49 years old. This equals almost 800,000 people infected with HIV plus there are even more than 900,000 orphans caused by AIDS (GIZ 2015).

Migration and Urbanization

Ethiopia is one of the least urbanized countries in the world. Only 18% of the population live in urban centers. However, urbanization is steadily increasing. The largest city is Addis Ababa with 3.3 million inhabitants, from which 55% live in slums. There are nine other big cities with 100,000 to 1,000,000 people. The most pressing need in urban areas is the very poor sanitation and waste management (GIZ 2015).

4.2 Value Chain of Fresh Vegetables of Ethiopia and Identification of Issues

4.2.1 Mapping the Vegetable Value Chain

In this chapter, we shortly present the value chain of fresh vegetables that we have observed in our study area. Furthermore, in order to reveal the basis for our analysis, we explain to which stakeholders we could talk during our fieldwork. A more detailed description of the value chain actors, the enabling environment and the supporting markets follows in the subsequent chapters.

Table 5 displays the value chain of fresh vegetables from the Meki/Ziway region in the CRV in Ethiopia. According to what we observed, it depicts the main linkages between value chain actors, which represent the flow of goods and services (inputs, vegetables).

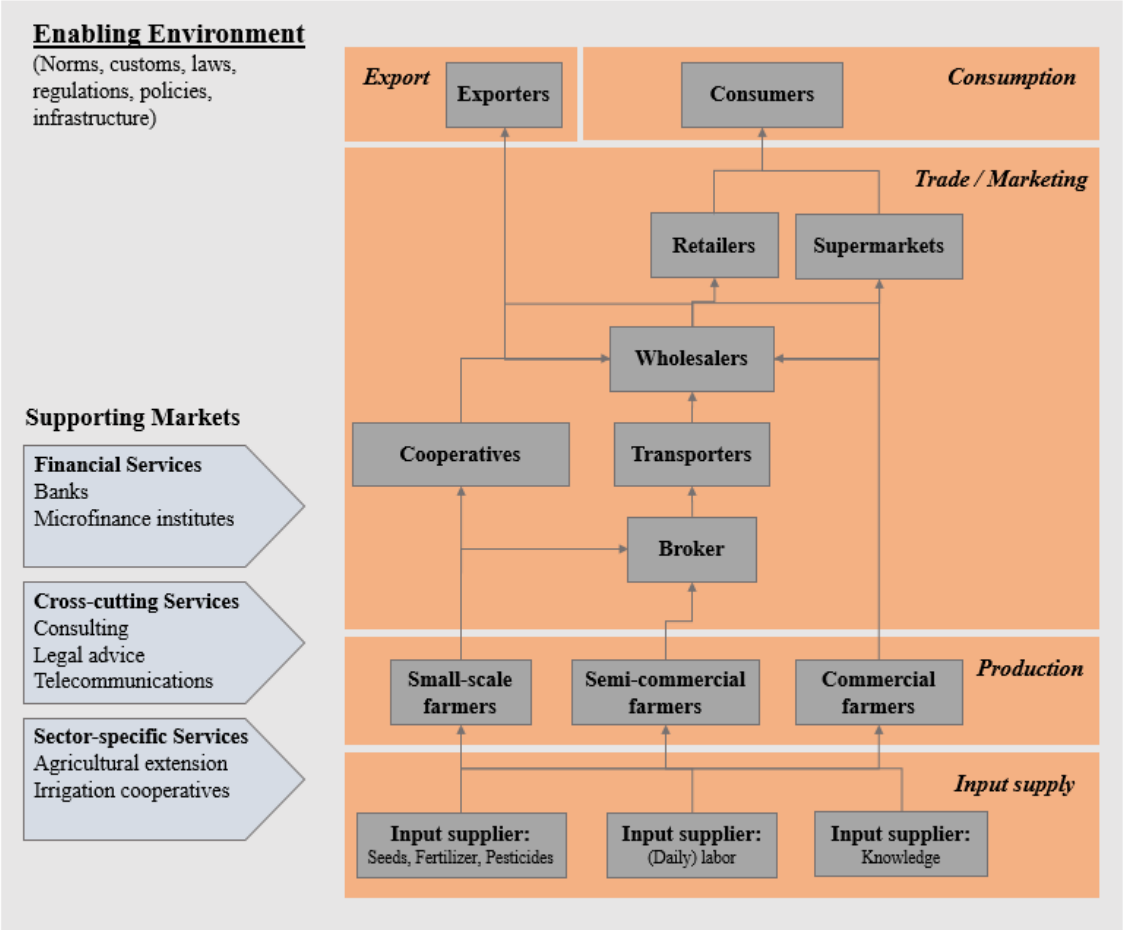

Table 5 Fresh Vegetable Value Chain in the Meki/Ziway region, Ethiopia (own illustration)

Enabling Environment

In the context of the enabling environment of the fresh vegetable value chain, we talked to governmental authorities on the one hand and to NGOs on the other hand. Some governmental authorities, both national and local, gave us a talk on their work and allowed for our particular questions. On national level, we visited the Ministry of Environment and Forest as well as the Ethiopian Horticulture Development Agency in Addis Ababa. On local level, we obtained information from the investment office of the district, the cooperatives promotion office of the district and the irrigation office of the district.

Concerning NGOs, we had the possibility to talk to the Ethiopian Catholic Church in Meki (Interview 43) and the Dutch NGO Solidaridad (Interview 17) in Addis Ababa.

Supporting Markets

Supporting markets as we defined in chapter 3.1 are partly hard to distinguish from input suppliers. Depending on the particular task of a stakeholder, he/she is rather input supplier, trader or belongs to the supporting markets. Take, for example, a cooperative

that provides seeds and chemicals on the one hand, gives technical advice on the other hand and markets the products of its members. It may take on different roles within a value chain (see also chapter 4.2.4.5 on the role of cooperatives). Similarly, agricultural extension might either be regarded as a direct input for vegetable production or as one component of the supporting markets (e.g. particular training on tomato cultivation or general training on water management).

Development-related research as well as agricultural extension services can be regarded as component of the supporting markets offering sector-specific services. At the beginning of our excursion, we visited the International Livestock Research Institute (ILRI) in Addis Ababa where they presented their LIVES project, which deals with value chain development. In the course of our fieldwork in the Ziway/Meki region, we then interviewed two development agents at an extension service site. Furthermore, we visited an irrigation scheme that was introduced and financed by the North Korean government. Unfortunately, we could not talk to any stakeholders (besides cooperatives) that offer financial services such as banks or microfinance institutes.

Input supply

On the level of input supply, we distinguish between suppliers of seeds and chemicals, (daily) workers providing labor and those who provide crucial knowledge for the vegetable production. In Meki, we interviewed seven local shopkeepers, which mainly sell seeds, fertilizer, pesticides and equipment to smallholder and semi-commercial farmers. Furthermore, we talked to the Meki Batu Cooperative Union and the ABINE Cooperative, which also provide inputs such as seeds and chemicals to their members.

With regard to labor as an input for vegetable production, we could interview eight daily laborers on the (daily) labor market in Meki.

Production

We identified three different types of farmers in the study area: smallholder, semi-commercial and commercial farmers. As the focus of our study project is on smallholder farmers, interviews with smallholders represent the largest share compared to the other types of farmers. We interviewed 19 smallholder farmers and three semi-commercial farmers. Furthermore, we visited two commercial farms, Genesis in Debre Zeyt and VegFru, which is located close to Meki. While we could conduct an interview at the VegFru farm, the visit to Genesis was limited to a tour of the farm.

Marketing and Trade

In order to understand market linkages between farmers and end consumers, we interviewed different value chain actors that are involved in trade and marketing of fresh vegetables. Smallholder farmers can sell part of their produce to their cooperative, which pool the quantities and care about marketing and possible processing. As mentioned above, we visited two cooperatives. While visiting the (onion) packaging facility of Meki Batu Union, we could also talk to four employees of Meki Batu Cooperative Union, which fulfilled different tasks within the cooperative (purchaser, labor manager and worker). However, the major part of smallholder and semi-commercial farmers' produce is traded via broker who serve as a market intermediary and link the farmers to the market. We had the chance to talk to three brokers about their tasks. Additionally, we interviewed seven traders that offer vegetables at the roadside.

Figure 14 Offering of road side seller in Meki Area

Some of them are farmers, too, selling their own and other farmers' produce. Moreover, we went to the local market in Meki and interviewed wholesalers and retailers of vegetables in order to get more information on the flow of vegetables, on the stakeholders involved and on prices (see Appendix 1). We also visited the *Piazza vegetable market* in Addis Ababa where we interviewed and observed wholesalers and retailers of fresh vegetables. Finally, we visited two supermarkets in Addis Ababa where we collected price information. In one supermarket (Shoa supermarket), we had the chance to talk to the manager (see Appendix 1).

Consumers

We did not explicitly interview consumers of fresh vegetables in Ethiopia. However, based on other interviews, we can derive some information on consumers of fresh vegetables in Ethiopia (see chapter 4.2.4.4).

Export

As we focus on the national market for vegetables in Ethiopia, we did not explicitly interview exporters. However, while visiting the (onion) packaging facility of Meki Batu Union, we learnt that the union also exports some products to The Netherlands (Interview 23).

4.2.2 Enabling environment

As explained in chapter 3.1, the fourth dimension of the VCA conducted in this study is the enabling environment including institutions like norms and customs, policies as well as laws and regulations, natural factors and public infrastructure that facilitate or hinder the movement of a product or service along its value chain. To better understand the processes within the vegetable value chain in the project area, this chapter presents several actors of the enabling environment identified, i.e. traditional support systems and indigenous institutions, local and international NGOs as well as governmental authorities.

Firstly, with regard to the institutional setting, the **Traditional Support System** (TSS) has to be mentioned. Ethiopia has a long tradition of informal and (semi-) formal **community-based organizations** such as the "*iddir*" and "*iqub*" that are self-help associations operating at the local level and offering mutual socio-economic support to their members. Due to lacking well-established market structures, indigenous institutions and social networks for the mobilization in agricultural production can be substantial (ABAY et al. 2015). Thus, TSSs are still very common within village communities and represent an informal and/or (semi-) formal safety net. "*Iddir*" is a traditional group in which people from the same community help each other in several social occasions as weddings and grieving times (Interview 13). Such TSSs also serve smallholders for credit provision and labor skills (e.g. harvest activities, emergencies). Joining a TSS may facilitate market transactions among smallholders and improve the access to land, labor and credit (ABAY et al. 2015). TSS can substantially reduce transaction costs and information asymmetry along the value chain.

Another important aspect with regard to **traditions** and **indigenous customs** in agriculture in the project area are habits and certain beliefs induced for example by religion (also see chapter 4.1.5 *Demography, Ethnicity and Religion*). Agricultural work might be postponed due to some holidays that prohibit e.g. plowing at these specific days. The relatively high number of holidays restricts farmers in their farming activity, may decrease income and causes yield losses (Interview 20). Besides, also stressed by DAs it

is really difficult to change farmers´ behavior concerning their farming activities, even though they would have much more benefits out of it. But lacking trust and human characteristics of "sticking to the old ways" constrain development and/or technological process.

For a better understanding of the **NGO** environment one has to know that formal civil society, thus organizations with legal personality, is only recently developing in Ethiopia, as civil society was oppressed under the Ethiopian Empire regime during the time of 1137 till 1974 (ICNL 2015). Severely restricted also under the rule of the military junta, the Derg regime (1974-91), modern civil society organizations were first established in the 1930s and in the beginning of the 1950s, when the Red Cross and other welfare organizations started to operate in Ethiopia (ICNL 2015). After having experienced the severe famines in the years of 1973 to 1974 and 1984 to 1985, many more NGOs emerged with a focus on relief and humanitarian services; especially after the downfall of the Derg regime in 1991 NGO numbers increased substantially (ICNL 2015). The Government then adopted in February 2009 the Proclamation to Provide for the Registration and Regulation of Charities and Societies (CSP), representing Ethiopia's first comprehensive law governing the registration and regulation of NGOs (ICNL 2015). According to the International Center of Not-for-Profit Law (ICNL) this law violates international standards relating to the freedom of association, due to the fact that it restricts NGOs that receive more than 10% of their financing from foreign sources from engaging in essentially all human rights and advocacy activities. Nevertheless, several NGOs engaged in farming activities try to improve and enhance smallholder income and livelihoods (Interview 43). The catholic NGO we have visited, for instance, seems to reach many households and integrate relevant topics such as the four dimensions of this study climate change, food security, gender issues and income generation, but also the local market situation. There is a high dependency on national and international financial support and donations, which is highly connected to the political environment and restrictions NGOs are operating in. Playing an important role as middlemen between existent knowledge on better farming practices and farmers, they are also dependent on the quality of research. In this context, we visited also an international NGO called "Solidaridad", a fairtrade foundation to push companies to invest in fair sustainable trade, especially linked to the coffee sector (Interview 17).

Secondly, as already described in detail in chapter 4.1.4.1 agricultural activities in the projects are embedded in a **legislative framework** and certain policies. With a unified

law regulating chemical fertilizers, for instance, Ethiopia gives a regulatory framework for fertilizer (WBG 2014). There are also laws or regulations in place that mandate the labeling and packaging of food products. But actually, the only related requirement in this context is that the label must be written either in Amharic or English.

Nevertheless, there is little licensing of market actors with the consequence of a complex and diverse market structure being extremely unregulated. Thus, the sector is characterized by a high degree of **informalities** and it seems too difficult and complex to apply formal structures (e.g. bookkeeping or taxes). Besides, insufficient integration of agricultural and market policy were observed, as well as too little awareness in politics e.g. in gender issues and human rights (Interview 17). Even though several programs and policies are planned on national level, implementation on regional and *kebele/woreda* level are really difficult and hard to control.

Thirdly, lacking of a good quality infrastructure and efficient **transport** can be a huge obstacle for production, making it difficult for them to obtain essential inputs as well as accessing markets. Ethiopia has undertaken a major trunk road investment program. In recent years, Ethiopia has dedicated three percent of GDP to road investments. The investment program has brought the quality of Ethiopia's trunk network level with other low income countries in Africa: 88% of the paved network and 60% of the unpaved network is in good or fair condition (AICD 2010) (see also 4.1.2 *Infrastructure*).

Another important component of vegetable production is irrigation making a stable and reliable **electricity** grid necessary. Even though Ethiopia has the potential to become one of the largest power exporters in Africa and is endowed with vast hydropower potential, currently it has one of the most underdeveloped power systems in Sub-Saharan Africa (AICD 2010). Not only unstable energy supply, but also access to water resources via irrigation schemes is an important constraint of vegetable production with special regard to climate change making irrigated agriculture even more important in the long-run. Decreasing rainfall and water shortages increase the demand for irrigation schemes that are currently working inefficiently, not at all or have not been constructed yet.

Besides, good public infrastructure also plays a crucial role with regard to communication and access to information by **ICT** development. Even though prices for ICT services are very low, Ethiopia's coverage of ICT service is the lowest in Africa and the Global System for Mobile Communication (GSM) signal covers barely 10% of the population (AICD 2010). Thus, the use of ICT by smallholders it not very well established yet.

4.2.3 Supporting Markets

As the fifth dimension of the VCA (see chapter 3.1), we want to analyze the supporting markets that supplement the value chain with its enabling environment and refer to financial services, cross-cutting services such as business consulting, legal advice and telecommunications and sector specific services, for example irrigation equipment or product design services. Supporting markets affect the competitiveness as well as the ability of firms in the value chain to access required inputs, capital and know-how (USAID 2007). For a broader understanding of the value chain processes of fresh vegetables in the project area, this chapter presents several actors that were visited or could be observed during the project excursion and research beforehand, i.e. cooperatives and unions as well as financial institutions, research institutes and other agencies.

Firstly, concerning credit sources in agriculture in the project area, accessing financial services for smallholder seem to be difficult. Farmers typically have to travel long distances to reach larger towns and cities, if they want to access basic financial services. As agriculture depends on well-functioning financial services and access to credit, farmers need better access to a range of financial products. Mostly small-scale farmers make use of the traditional support systems, because often the rents are too high for credits offered by the banking sector (Interview 34).

Secondly, with regard to cross-cutting as well as sector-specific services, there are several **extension services** in the project area that are offered either by the state (DAs), private service provider or by cooperatives. For the government-driven DAs, there are no strong incentives that would serve to transfer knowledge from the regional to the local level, thus DAs are missing specific knowledge and there is no or little documentation of DA activities. Due to missing monitoring and evaluation schemes, there is a high degree of informality and a huge knowledge gap. The trainings and capacity building measures offered by cooperatives highly depend on the cooperative itself. Besides, there is just little participation by women, except from especially female-directed workshops (Interview 30).

In the project area exist many different **cooperatives**, that offer financial, cross-cutting as well as sector-specific services. Farmers group in irrigation cooperatives or so called water user associations (WUA), as well as for insurance and credit issues etc. This way cooperatives provide services to the farmer that the state does not provide or that farmers could not afford by themselves. Even though they are often inefficient and still

underdeveloped, cooperatives as an institution are necessary. For example, quite huge storage rooms are available, but are not used due to the lack of exporters (Interview 22). Moreover little trust within the cooperative and their members cause dissatisfaction, for example, because of cases of corruption or unfairness (Interview 40). Another observation was the lack of professionalization and administration (more detailed see chapter 4.2.4.5).

Finally, sector-specific services are also provided by several national and international **research** institutes that are working on issues of agricultural production and value chain development in the project area. There is an information flow for example about new technologies between the government-supported DAs with its extension services centers and other research institute, e.g. the Melkasa Agricultural Research Centre (MARC), supervised by the Ethiopian Institute of Agricultural Research (EIAR), and colleges and universities (Interview 30). Nevertheless, there is a lacking connection and transfer of this knowledge and scientific work throughout the value chain up to farmer levels. The failing market structure observed may be improved by quantitative data and scientific work on market access.

4.2.4 Stakeholders of the Value Chain

4.2.4.1 Input supplier

Input is supplied in form of labor from (daily) workers on farms (Interview 1) and in factories (Interview 22). Very few are employed permanently, most just temporary for a specific work purpose, and the employment ends with the fulfillment of this purpose. On farms the work includes tasks like: preparation, planting, cultivation, weeding, irrigation, application of agrochemicals, harvesting and transportation of the products (EMANA/GEBREMEDHIN 2007, p. 19, Interview 9). In factories work tasks can be: peeling, washing or packaging of vegetables. Workers are found in the surrounding neighborhood or from the (Ziway or other) labor markets (Interview 1 and 9) and hired after their skills and previous experience (Interview 9, 15, 22 and 23). The type of employment is mainly contract, each worker is paid a fixed price per unit (sack, box, row) regardless of the time he needs to fulfill the work (Interview 1 and 22). For example a farmer near Ziway pays Birr 1.5 per row of planted onion seedlings. The farm size defines the number of employed workers, for example has one of the visited semi-commercial farms some permanent and temporary workers employed all year through, and employs around 40additional workers in peak season of harvesting (Interview 27). The commercial farm employs even 600 workers at the time we visited (Interview 28). Small-scale farmers

employ workers, if at all, for short time periods (Interview 1) and often mainly rely on family labor (EMANA/GEBREMEDHIN 2007, p. 19, Interview 11 and 12).

Input in form of agrochemicals and seeds is supplied in shops and we interviewed some shopkeepers in Meki. The availability of the products and the capital of the input supplier determine the range of goods offered in a shop. Some input suppliers lack of capital to purchase fertilizer (Interview 8) and most complain about unstable availability of products (Interview 29). The agrochemicals are acquired in Addis Ababa from importers and the import countries vary between: India, China, Netherlands, France, Switzerland, Denmark, Israel and Saudi-Arabia (Interview 24 and 29). All input suppliers experience an increase in demand for agrochemicals (Interview 24). Seeds sold in the shops are for example for vegetables like: tomato, onion, pepper, beans and cabbage (Interview 29 and 24) and the seeds are of local or foreign origin (for example from Israel) (Interview 31). Other purchased products are the equipment for applying chemicals, like sprayers (Interview 31). The prices are fluctuating and flexible depending on amount and customer (Interview 29 and 31). Customers can be all kinds of farmers, but in the shops in Meki small-scale farmers are the majority. The commercial farm we interviewed needs a large quantity of agrochemicals, which is not available in the small shops in Meki, and obtains his agrochemicals from a supplier in Addis Ababa (Interview 31 and 28). A service offered by most input suppliers for free is to visit the farmers' fields and identify the pest or disease, before he sells the appropriate pesticide to the farmer. A different possibility is to bring infected plant parts to the shop and get advisory service there (Interview 8). Knowledge about the different kinds of pesticides, fertilizers, diseases and pests are also given for free to the customer (Interview 19, 7, 8 and 31). Some input suppliers let the farmers buy the agrochemicals on credit, in terms that they can pay the agrochemicals after harvest (Interview 31), but others deny that due to the risk of getting not paid (Interview 7 and 8). Most shops are family businesses and different family members work at the counter (Interview 19), but some employ sellers (Interview 31). Besides the shops cooperatives like the Meki Batu Cooperative Union and the ABINE Cooperative provide seeds and agrochemicals to their members.

The supply of knowledge as input is hard to distinguish from what we define as supporting markets in chapter 3.1., like already mentioned in 4.2.1. Activities of cooperatives and extension services are rather being regarded as supporting markets, than as direct input.

4.2.4.2 Producer

4.2.4.2.1 Small scale farmer

Defining small-scale farming is a challenging task as understanding of the term small-scale farmer is ambiguous due to the necessity of denominating what size is small in the local context on the one hand and the recognition that size is not all that matters on the other. Hence, other characteristics have to be added for a context-specific understanding. The following description of interviewees as small-scale farmers relies on the understanding presented by MURPHY (2012, p.3), which, based on the International Fund for Agricultural Development (IFAD) definition with regards to farm size as of two hectares or less (IFAD 2008), adds metrics besides farm size to contextualize the farms' "marginalization in terms of geography, assets, resources, markets, information, technology, capital, and non-land assets". Murphy further stresses the lack of access to capital markets, credit as well as information (concerning credit conditions and markets). Consequently, even if some of the interviewed farmers have more than two hectares at their disposition, they can be regarded as small-scale farmers due to the nature of farming they pursue as well as the marginalization they experience with regards to information and market access.

In the following, the general characteristics of the small-scale farmers interviewed during the fieldwork are presented.

During 16 interviews 19 small-scale farming households were interviewed (one group interview with four farmers). The majority of interviewed farmers were male (thirteen male, six female interviewees). Five interviews were conducted with small-scale farmers that also sell produce on the roadside. The interviewees' age was varied between 18 and 58 years of age. The mean household size was seven with household sizes ranging from three to eleven. The mean farm size is 2.2 ha (median 2 ha). Most small-scale farmers irrigate at least part of their land. Small-scale farmers usually have property rights to the land they work; some rent additional land from farmers that have land in excess or cannot cultivate it for other reasons (Interview 39).

The vegetable production of all small-scale farmers is market-oriented, i.e. they produce for the market and use excess for own consumption (e.g. Interview 16).

Nevertheless, the majority also indicated that in addition to vegetable production they are involved in cereal production. The cereal production is mainly intended for own consumption and only excess harvest is marketed (Interviews 35, 38, 39, 40).

With regards to income security and credit access farmers are aware of the risks associated with vegetable production and resulting income instabilities (e.g. Interviews 34, 38, 39 and 40). That is why farmers make use of coping mechanisms such as bank savings, credits, if accessible and income diversification strategies, e.g. livestock (Interview 39).
It is recognized that diversified vegetable production in one growing period reduces the risk exposure with regards to unexpected price changes of one crop; yet, this strategy is usually not pursued (Interview 38). Moreover, in addition to their farming activities the majority of the interviewees possess livestock. The prevalent livestock kept is cattle, followed by oxen used for farming activities (compare inter alia Interviews 5, 13, 40).
Furthermore, the majority of the interviewed small-scale farmers (roughly two thirds) affirmed a cooperative membership. Despite a range of benefits derived from such a membership, shortcomings of the cooperatives' operating modes were also recognized (e.g. Interviews 13, 34 and 39).

Other noteworthy aspects considered during the interviews are introduced in the following:
Small-scale farmers generally rely on brokers for price information as well as market access (compare inter alia Interviews 2, 3 and 41).
Statements regarding extension services are contradictory: While some farmers feel supported by the extension services (e.g. Interviews 12 and 13) and consider extension services as universally present in every production phase (Interview 41). Others used to benefit from extension service but the relationship with the extension worker has deteriorated (Interview 21) or the services provided were regarded insufficient (Interview 3). What is more, services did not deal with the most pressing issue, namely (climate change-induced) water shortage (Interviews 3 and 21). In one case the services were discontinued (Interview 40).
Small-scale farmers involved in vegetable production are faced with time-sensitive activities that require additional labor force (Interview 39). Therefore, small-scale farmers producing vegetables employ daily laborers for specific tasks that need to be accomplished in a timely manner (ibid). However, not all small-scale farmers have the means to employ additional workforce in the form of daily laborers, instead they rely on family members (Interview 21).
Finally, the farmers themselves identified inter alia the following as major risks from vegetable production: power of brokers and relationship to them, price fluctuation, diseases (and their unpredictability), crop damage from excess rain; while water shortage

is generally not recognized as potentially problematic due to the widespread irrigation access in the rift valley (Interview 38).

4.2.4.2.2 Semi-commercial farmer

The gap between the different kinds of farmers is often quite small. While some small producers farm their land for their own consumption only, most of them also sell parts of their production if they can and some are even able to produce specifically for the market separately from subsistence production (NYIKAI 2003). This last group can be considered independently and is called semi-commercial farmers. They differ from both the commercial farmers as well as the subsistence farmers in regard of their aims. While the commercial farmer wants to maximize his profit and the small scale farmer wants to sustain his family the semi-commercial farmer wants to maximize his profit while retaining enough product to sustain his family. Semi-commercial farms differ widely in size, input and output. In the literature, semi-commercial farmers are that proportion of the rural community which is able to generate a family income just above the poverty level up to those who can afford to pay for food and non-food consumption items from the earnings in the agricultural sector (MELLOR 2014).

During the fieldwork we were able to visit three semi-commercial farms (Interviews 27 & 36). The first farm had a size of 13 ha, of which three hectares were irrigated and ten used for non-horticultural crops. The other farm was roughly 18 ha in size with the entire cropland irrigated. Both farmers were able to afford permanent workers. The first had four permanent as well as around 40 daily laborers and the second had at the time of the interview 150 employees of which most were daily workers.

Both farms had a quite diversified production including different kind of livestock. The second farmer was also engaged in fattening and dairy production and was the first in the area to install a biogas plant. Semi-commercial farmers like these are often able to invest in better machinery such as groundwater pumps and tractors, as well as water conserving drip irrigation. Furthermore they are more likely to gain access to information distribution channels such as radio and television which puts them in a better negotiation position with brokers, although according to our interview partners, brokers are still omnipresent (Interview 36). It is important to note, that even though commercial farmers are better situated than smallholder farmers they still face a variety of difficulties such as little market power, low market information, incompetent unions, high dependency on

technical equipment such as water pumps but lacking of technical comprehension to be able to maintain and repair them themselves (Interview 27, 36).

When asked how the farmers were able to gain access to secure property rights on land - even in times of the communist regime, which officially prohibited the private ownership of land - we received statements such as “we were really lucky, after the DERG regime fell” (Interview 36) or no clear statement at all. This leads inevitably to the assumption that the appropriation of land was not following democratic principles but favored influential families or affluent individuals that saw opportunities in the upheaval during the politically unstable times. As ownership of land is one of the most important factors distinguishing semi-commercial and smallholder farmers, it should be kept in mind when analyzing lingering poverty in rural communities.

Figure 3 Irrigation system at a semi-commercial farm in Meki area

4.2.4.2.3 Commercial farmer

While in small scale farms the family provides a major part of the capital and labor for the farm, larger farms can still include a farm family but generally hires outside (steady) employees and utilizes capital from other sources.

We had the opportunity to visit two commercial farms, the Genesis farm in Debre Zeyt and the VegFru farm in Meki. However only VegFru is considered in the report since the visit at Genesis was rather considered as good practice example to get a first impression on large scale farming in Ethiopia than for research purposes. The VegFru farm was a former state farm, given to the farmer as in investment in 1994. This is different to semi-commercial farms where the land is mostly rented from other farmers to increase the size. VegFru covers 150 ha in total, 90 of which are currently under production and 10 ha used for infrastructure.

The farm produces crops, fruits and vegetables. Green beans, sugar snap and mangitu are produced for the export market, which is mainly located in Holland. The production for Europe is based on contracts and most profitable when the farming season in Europe is over. Since this market requires a very good quality of the produce, the goods that don't meet the standards for the export market are sorted out and sold at the local market, for instance in Addis.

For the local market in Addis Ababa the farm produces onions, tomatoes, cabbage, peppers, chilies and lettuce throughout the year, because it is climatically possible and the farmland is irrigated with water from the river. The vegetables with even too bad quality for the market in Addis Ababa are used as animal feed. The farm has a warehouse and outlet store in Addis Ababa where traders can directly buy the farm products. The managers of the farm told us that they do not cooperate with brokers as traders are coming directly to the farm or the outlet store in Addis to buy their products. The amount of vegetables produced and the social standing makes the farm considerably more powerful in every aspect of the market. This is as a huge difference to semi-commercial and small scale farms which cannot avoid the brokers due to insufficient access to market information.

Figure 16 Storage of chemical inputs at the VegFru farm, Meki area

The farm employs around 600 workers, from which 150 are permanent employees. The workers have their own compound to live within the farm. Seasonally and temporary workers can be employed up to three years and the payment is not daily based, but depends on the work and can be up to around 60-70 Birr per day which is not more than at semi-commercial farms. Usually a worker is employed for three month, but depending on their performance temporary employees can become permanent employees. Employees pay half the price (e.g. for tomatoes: 10 Birr at the Addis market; 5 Birr at the farm) for the products produced on the farm.

Alternative business opportunities like value addition in terms of processing the vegetables, e.g. canned tomatoes for the export market, are not considered at the farm. (Interview 28)

4.2.4.3 Middlemen

Important middlemen we interviewed were different kinds of traders and some broker, we missed to interview transporter, collector and exporters. The different kinds of trader are: exporters, wholesaler, retailer and road-seller. We interviewed retailer and wholesalers on markets or in small shops and road-seller along the road, where they purchase products to passing by travelers (Interview 4). Traders buy products from producers and sell them to consumers. They fulfill the function of vending and distributing products. The product range of most vegetable traders we met is very small and the quality is not standardized. The quantity in which the different kind of traders we interviewed offer their products varied widely. Wholesalers offer bulks (up to thousandths of kilograms of a vegetable per day), retailer offer smaller amounts (hundreds of kilograms to just kilograms per day) (Wholesale market in Addis Ababa) and road-sellers mainly offer just small amounts (depending on availability and day (more on holidays)) (Interview 4).

Retailers include supermarkets, green grocers, vendors, hotels, restaurants, cafeteria and purchase their offered vegetables from producers, collectors and wholesalers. Some retailers sell their products as street vendors, others have fixed selling spaces and licenses. There are many retailers in all towns, but wholesalers are only found in larger horticulture market centers, like Addis Ababa (EMANA/GEBREMEDHIN 2007, p. 46).

The wholesalers and retailers we interviewed sell their products in cities and are no member of a farm household, compared to the road-sellers we interviewed which are all family members of a farm household (Interview 10, 6 and 14). The road-sellers sell

vegetables and potatoes to increase the family income (Interview 4). The products origin is their own harvest, close by farms and/or products they have bought from brokers or other traders. The origin depends on the availability (Interview 6). All interviewed road-sellers possess no record or documentation of their selling and pay no tax (Interview 10 and 34).

Some traders employ temporary workers to sort out rotten or damaged vegetables (Interview 6) or to peal and package the products before selling them to the customers. We also observed that damaged vegetables are sold to poor looking people (presumably for lower prices) or collected from them out of the trash on the Addis Ababa market. Partly the poor looking people try to sell the damaged products on the corners of the market, what makes them to retailers too (Wholesale market in Addis Ababa).

The quality and quantity of vegetables is unstable and traders are unable to forecast their sales. Profits are often very small, for example is the buying price of a road-seller Birr 10 and the selling price Birr 12 per Kilogram of onions, what makes a profit of just Birr 2 (Interview 10).

The transportation of vegetables to trading spots is handled differently. Some farmers deliver their products to the market themselves or transporters and collecting agents are payed to handle the transport. Transportation costs mainly are payed by the traders (Interview 6 and 4), except farmers bring their products to the market themselves.

Some interviewed retailers and road-sellers buy their products from wholesalers and not directly from producers. Moreover, lots of vegetables are damaged during transportation or storage and we observed high trow-outs on the Addis Ababa market (Wholesale market in Addis Ababa).

As there is no standardization or inspection for vegetables, traders are unable to place orders to distant places, because they cannot be granted to get the quantity and quality they ordered. Purchases are mostly done in person to prevent this risk. Further are most sales handled without legal contracts, what makes it even more important to know and trust the trading partner.

Traders have limited information about prices and market flows, due to that they are unable to deliver to unknown markets or make contracts for future purchases. Costs for enforcement, information and partner search let transaction costs for traders rise. To reduce these costs traders engage brokers as intermediaries. Brokers act on behalf of traders (Gabre-Madhin, 2001) and are needed for price and market information to make a connection between retailer and farmer (Interview 6).

Direct retails from farmers is for most traders impossible, because the market power of brokers is to strong (Wholesale market in Addis Ababa). The brokers have a crucial role in the market, Their service is to go to producing farms during the harvesting seasons, negotiate and fix prices and make connections to traders (Interview 5, 34, 35 and 37). Brokers are involved in most sales (Wholesale market in Addis Ababa) and payed with a commission (Interview 18 and 5). For example is one of the brokers we interviewed in contact with 30 to 40 farmers per day and gets a commission per kilogram. Up to two truckloads of products change owners trough his hands in a time from one week and twelve days. He earns Birr 1200 per truck load and says he became a broker because brokers have a higher income than farmers (around Birr 20 per 100 kilogram). Brokers are connected between each other, to share their information about prices and market flows (Interview 5 and 37). According to EMANA and GEBREMEDHIN (2007) there are three types of brokers common: the farm level broker, the local broker and the urban broker. The tasks of the farm level brokers is to find fitting producers and link them with a local broker. The local broker is located in a small town nearby and links the farm level broker with a urban broker. Local brokers are the key marketing agents and communicates with the farmer. Urban brokers are in contact with the buyers and set the prices. Farmers and traders are not involved in the decision of price setting (EMANA/GEBREMEDHIN 2007, p. 46). If farmer try to negotiate prices the brokers gang up and boycott the purchase and leave the product to rot (EMANA/GEBREMEDHIN 2007, p. 46, Interview 2). Just one commercial farm we visited claims to be able to sell directly to traders, without the interference of a broker (Interview 28). These three types of brokers are a syndicate and well organized. The producers are mainly the least benefiting from this marketing system, as the traders still make profit with their sales and the brokers have their commissions (EMANA/GEBREMEDHIN 2007, p. 46).

4.2.4.4 Consumer

We did not interview the end consumers of horticultural produce. But we had the chance to speak to managers of supermarkets in Addis Ababa and retailers/wholesalers at the Mercato in Addis as well as the vegetable market in Meki. This allowed us to witness a different structure of shopping facilities. As we left Addis Ababa, hardly any supermarkets were to be found. Consumers in Debre Zeit and Meki seemed to prefer to shop for fresh produce at the markets whereas a number of little shops provided processed goods, water and toiletries. The markets offered a broad variety of fresh vegetables – price negotiations originate in differences in quality or variety. The consumers in Addis Ababa

had very differentiated shopping patterns: we observed a lot of consumers buying horticultural products at the Mercato as well as consumers that shopped in the supermarkets. Yet, the grand opening of a new supermarket in the area around Bole made us realize that even in Addis Ababa supermarkets are still a relatively new concept. The air was filled with excitement and curiosity, we and most of the other customers were astonished by the range of the products available. Only at the newly opened supermarket we could observe special offers and reasonable pricing – the two other supermarkets we visited charged their customers very high nonnegotiable prices for the convenience of having a great choice of products in one location. Also the added value through washed, weighed, packed and refrigerated vegetables may be a reason for the higher prices.

Figure 17 Packed, weighed and refrigerated vegetables in a supermarket in Addis Ababa

4.2.4.5 Cooperatives

Cooperatives in Ethiopia have a long history, one can distinguish between three generations of cooperatives that evolved from the year 1960 on. Cooperative movements first started during the Imperial period and continued through the Socialist and the EPRDF period. Under the *Farm Workers' Cooperative Decree* in 1960 the first cooperatives were introduced in order to assist government efforts with the development of the agricultural sector (GETNET/ANULLO 2012). Most of the members of cooperatives were large landholders and engaged in the production of cash crops such as coffee, cotton or tea for the export market (LEMMA 2008).

During the socialist government means of production were supposed to be put under the control of cooperatives with the aim of increasing production as well as bringing an end to capitalist operations in Ethiopia through guaranteeing an equitable resource mobilization and distribution. Unfortunately the cooperatives were characterized by a tendency of ignoring smallholders, mandatory participation and strict production quotas. Those cooperatives were meant to organize peasants, control agricultural production,

assist in marketing of the produce and sell inputs and consumer goods to members. But after the downfall of the Derg regime in 1991, most of the socialist cooperatives were abandoned or misused by locals for their own good (ABEBAW/HAILE 2013).

From 1991 until 1994, when the *Agricultural Cooperative Societies Proclamation* was enacted, cooperatives did not receive any political attention (GETNET/ANULLO 2012). The proclamation states that cooperatives should be independent entities organized to promote common socioeconomic interests of their members. To manage the proper implementation of cooperatives' legislation, the Federal Cooperatives Agency (FCA) was established. From 2002 on the FCA was also responsible for developing policies and laws consistent with international agreements on cooperatives (BERNARD et al. 2010). The emphasis of the Ethiopian government on cooperative societies is fueled by their urge to further develop the agricultural sector in order to achieve food security. The Ethiopian government had to acknowledge that it was inexpensive and easy to provide organized farmers with modern technologies and other farm inputs. The cooperative sector gained momentum in Ethiopia as research and experience showed that cooperatives can pool resources, help to gain collective bargaining power, reduce transaction costs, mitigate risks and uncertainties for smallholders and therefore ensure food security. Thus cooperatives also play an important role in the national strategic papers such as SDPRP, PASDEP and GTP (NUGUSSE/VAN HUYLENBROECK/BUYSSE 2013).

The supporting environment created by the Ethiopian government allows cooperatives to grow in terms of number and members: the total number of cooperatives has increased from 26,672 in 2009 to 53,982 at the end of 2014, while the number of members during the same period increased from 5.8 million to 8.3 million - which represents almost 10% of the Ethiopian population (TESFAMARIAM 2015).

Region	Type of unions	No. of unions	No. of coops
Oromia	Multi-purpose	60	2214
	Coffee	4	250
	Saving and Credit	26	696
	Irrigation	2	21
	Fruits and Vegetables	3	111
	Dairy	4	51
	Mining	8	394
	Grain	3	73
	Forestry	2	16
	Consumer	4	51
	Other	4	51
	Total	120	3928

Table 6 Distribution and number of cooperatives/unions by type 2014 (c.f. TESFAMARIAM, 2015)

According to TESFAMARIAM (2015) in our study area – Oromia, 111 fruit & vegetable cooperatives and three umbrella unions are to be found. The only other state with such high numbers of fruit & vegetable cooperatives is Amhara with 31. The cooperatives with the highest numbers of members and unions are the so-called multi-purpose cooperatives that can also serve as agricultural cooperatives. Overall the role of cooperatives in Ethiopia is multi-functional: they provide strategic agricultural inputs such as fertilizer, improved seeds, pesticides or distribute consumer goods to members and non-members. They help with value-addition through providing cooperative processing units and provide market-information, access to markets and trainings.

Through the support of the NGO ACDI/VOCA, in Oromia successful cooperatives were then established to export coffee or to import fertilizers. VOCA worked through government structures to restructure cooperatives in order to make them more transparent, member-owned and democratic. Thus cooperatives and unions are well integrated throughout Ethiopia's organizational and institutional networks. They collaborate with governmental agencies (such as the Ministry of Agriculture, the Ministry of Industry, the Women Affairs Office and the Labor and Social Affairs Office), research centers and in

2002 the Oromia Cooperative Bank was founded. But this vertical and horizontal integration, as well as the fact that cooperatives are a major source for employment, lead to unwanted dependencies. (DEVELTERE et al. 2008)

According to literature the problems most cooperatives are facing are considering their internal structures such as the limited participation of its members in decision-making, distrust between members and the board, lack of managerial or auditing skills and absence of appropriate records. Nevertheless, they are institutions that have a positive impact on rural livelihoods and poverty reduction among the rural poor (GETNET/ANULLO 2012).

During our research most of our findings from literature were confirmed: Cooperatives were seen as malfunctioning businesses with inefficient structures. NGOs supporting capacity building within the board found it very de-motivating to see board-members being replaced by untrained farmers from time to time. Positions that required certain skill sets were usually filled with members of the board which had to be reelected after two years to continue their work. Skilled staff on adequate positions within the cooperatives were therefore rare – thus it is "very difficult to turn those cooperatives into viable businesses" (Interview 17).

The sustainable funding of cooperatives also seemed to be highly related to their success – the Batu Irrigation Cooperative was founded 1985 after a massive initial investment which was used to build an over-dimensional irrigation scheme. We had to observe a rundown pump house with only a fraction of the pumps functioning. The capacities to service and manage the pumps were absent. Also ABINE – the Women's Cooperative Vegetable and Fruit Collection and Selling Center which was established with the help of OXFAM and the Ethiopian government abandoned its roadside shop. The cooperative activities were pausing until the members finished rethinking their business strategy (Interview 20 and 26).

The Meki Batu Union is the umbrella organization for a diverse set of 56 cooperatives (multi-purpose, irrigation and consumer cooperatives). They work closely together with the EHDA, nepotism/favoritism during the selection of staff has to be assumed, but nevertheless coordinated action was absent. The union grew quick, and it seemed as if the left hand did not know what the right hand was doing. The onion processing plant was developed to add value to a product through washing, peeling and cleaning – whereas much simpler strategies could have had a similar effect. Their biggest problem was that the production of their members was bigger than the absorption capacity of the union. Additional to that, brokers were making it extraordinarily difficult for the Meki Batu

Union to market their product. The union managed to find direct channels to their customers through supplying fresh vegetables to universities, consumer cooperatives in Addis, Ethiopian Airlines and green beans for export. Also the perishable nature of most of the agricultural produce makes it difficult to handle, but appropriate post-harvest handling and transport could help to adequately store them in warehouses or refrigerated store houses. The union acknowledged that storage would be an easy way to balance seasonal supply- and price-variations. We met many ambitious members of cooperatives and unions - therefore we have to acknowledge that the cooperatives and unions will be part of a solution for the sustainable development of the vegetable value chain in the Rift Valley. Capacity building supported by local governments and NGOs could help to avoid administrative difficulties, trust between members can be enhanced by a certain level of transparency and democratic structures within the cooperatives. The cooperatives and unions could also belong to an integrated approach to the direct marketing of products and therefore the redistribution of power away from brokers back towards the farmers. In our value chain cooperatives are, will remain or maybe will become an even more important stakeholder in the near future.

Cooperatives:

- Receive a lot of support from the Ethiopian government and international donors
- Need to be established as sustainable and integrated businesses
- Will play an even more important role in the development of Ethiopia's horticulture value chain in the near future

4.2.5 General Value Chain Issues in the Project Region

During our research in the study region some general value chain issues for fresh vegetable could be observed that will be briefly addressed in the following chapter.

The most striking observation we made was the current market situation for fresh vegetable in Ethiopia. The whole market structure is characterized by a **high degree of informalities**. There are rarely contracts or binding agreements, and consequently just little security for stakeholders or no security at all.

Due to **information asymmetries** there is a significant power imbalance concerning the price setting, leading to the fact that often brokers have the highest bargaining power and can therefore determine the prices for which they buy the vegetables from the farmers.

Besides, we observed a **weak market linkage** and a **lacking market integration**, which may result in local overproduction, respectively undersupply. This missing integration of local markets to regional markets may intensify food spoilage (see below). The above mentioned information asymmetry may be caused by insufficient information transparency and the demands of different markets that strengthens the weak market integration.

Oversupply in one season leads to undersupply in the next season, if the products cannot be sold. In the livestock sector this mechanism or effect is also known as the "Cattle Cycle" (ROSEN et al. 1994), an **oversupply-undersupply-cycle**. We could observe this procedure for the case of tomatoes in our study region: As prices for tomatoes had been high in the last season because only few farmers had grown them, many farmers decided to grow tomatoes in the current season which consequently lead to an oversupply and very low tomato prices. Members from the catholic NGO confirmed that oversupply-undersupply-cycles are a serious problem in the region and will happen with other commodities as well (Interview 43).

With regard to product quality and the treatment of fresh vegetables along the value chain, another general but important issue is the **perishability and food spoilage** of the products. **High losses occur on aggregated levels** with produce loss increasing from the bottom to the top along the whole value chain. Starting at the farmers´ level, first losses are caused by harvesting or even non-harvesting. Ready for transport, the vegetables packed in boxes are squashed or sorted out by throwing them away or leaving them on the roadside. With each stage of the value chain that includes re-packing or transporting the produce, the losses increase. In some cases this can lead to losses higher than 50% of the produced quantity.

Such **inefficiencies along the value chain** are creating **high transaction costs** and thus, represent a significant problem. Not only the **lack of capital**, but also the **lack of knowledge and technology** often lead to informal and improvised solutions. Self-repaired water pumps by unskilled smallholder farmers are just one example that result in unsustainable water management as well as in just temporally functionality. Moreover, such conditions lead to situations that farmers are compelled to cooperate with pump owners by sharing profits and often unfair contracts making the smallholder farmers dependent from investors.

Another important aspect we observed with regard to the market situation is the **lack of comprehensive market analyses, and scientific research**. There is no trustworthy

information available to establish neither a reliable market and price information system nor pricing lists supplied by market authorities.

By observing the value chain concerning policies and institutions, it becomes obvious that the government approach does not fully succeed to address the main issues of the value chain stakeholders especially with regard to the failing enabling environment and policies (see chapter 4.2.2). Long-term solutions for water supply and functioning irrigation schemes are expected from the government. In the fieldwork, farmers often do not demonstrate that this issue is their own responsibility, even though some wish to have access to credits in order to have their own pumps and consequently being more independent.

4.3 Concept specific results

4.3.1 Gender

In order to gain an overview of gender specific activities in the horticultural value chain, we interviewed many stakeholders - men and women. But particularly during our on-farm visits it was not always possible to speak to the woman of a household separately. During most of the interviews male members of our studyproject-group or development agents were present. This might have kept women from talking openly about their situation, but we got the impression, that this was mostly not the case. Finally we visited stakeholders belonging to the enabling environment, supporting markets, producers (smallholders, semi-commercial and commercial), processors, traders (wholesalers, roadsellers, retailers), input suppliers (agrochemicals, labor). The interviewees in NGOs or government agencies such as the Ethiopian Horticulture Development Agency were mostly men, but on farm level or at the labor market we had the chance to interview many women.

Enabling Environment

As was stated before strong role conceptions still have a major impact on farming activities that are done by male or female farmers. Perceptions as "*if a woman would use the plough the rain won't come*" (Interview 16) are still widely spread among the rural population and therefore weaken the autonomy of women in their farm work. Despite the introduction of political programs that are focusing on gender equality the implementation is often hindered by the strong cultural norms and practices that are still extremely prevalent - especially in rural areas (WORLD BANK 2009).

The interviews we conducted with the extension agents, the NGOs as well as with the farmers confirmed the main gender issues we had found during our literature research. At the interview with the extension agents they stated that female farmers are less involved in the trainings because they have a lower willingness to participate in mixed trainings. In mixed trainings it is mostly the men who attend because both male and female farmers see it as the man's responsibility to go to agricultural trainings, even though women are doing a big part of the farming activities. (Interview 30) Despite the fact that women are involved in the majority of farming activities, there is still a widespread perception "*that women don't farm*" (UN WOMEN 2015). The main difficulty according to the representatives of the catholic NGO is to make women join the trainings they are offering. According to them men often come to trainings on behalf of their wives to get the inputs. This happens either because women are afraid of coming alone or because their husbands do not want them to go and the wives are afraid to do it against their will. Also some women who had the chance to acquire a certain level of education do not fear going to agricultural trainings, whereas illiterate women worry about embarrassing themselves in front of the other participants. (Interview 43)

Women do also participate less in trainings due to bigger time constraints because they are managing the household and are taking care of the children. The development agents told us that female farmers are more interested in trainings about nutrition, cooking or fuel-saving stoves. Therefore they sometimes "trick" women into participating in agricultural trainings by announcing a training about nutrition where they also train them on farming techniques etc. (Interview 30)

The traditional support system such as *dabo* can be advantageous for female farmers as it offers help from the community but it can also cause an increased burden for the female farmer as she is expected to provide food for the additional helpers which can be a challenging task (Interview 16).

There are some NGOs that offer specific trainings for female farmers but in most cases they conduct mixed trainings which are attended mostly by men. The Dutch NGO Solidaridad doesn't conduct specific training for women, but offer the same projects for male and female farmers because they are targeting "*an inclusive supply chain which means that everybody should be participating*" (Interview 17). Gender is considered as integrated issue together with food security or climate-smart agriculture. They focus on sustainable supply chains and try to integrate gender issues by trying to strengthen women's participation in agricultural trainings. (Interview 17) The catholic NGO

conducts special trainings for women for topics such as water management in cooperation with experts from the government. The NGO offers cross-cutting topics focusing on gender and food security - for example they provide small ruminants such as sheep or goats which can be beneficial for FHH. They are also addressing two types of groups with trainings on incoming generating activities and saving schemes: FHH and mixed household groups. There are special women committees that are being trained by the NGO and then go back into their villages and pass on their newly acquired knowledge to the farmers there. (Interview 43)

In chapter 4.1.4 it was shown that the institutional framework for supporting female farmers is looking good on paper but that Ethiopia is still far away from achieving gender equality. According to the UN Ethiopia has the lowest gender equality performance indicators in whole sub-Saharan Africa. Ethiopian women and girls are facing inequality in terms of literacy, health, livelihood and basic human rights which manifests itself in the low social status and lack of social support networks (UN Women 2015). Female farmers in rural Ethiopia also have only limited access to key productive resources, which applies for both women in MHHs as well as for women in FHHs.
Unfortunately there are still major problems with the implementation of governmental programs especially when it comes to the coordination between the different agencies. At the interview with the Ethiopian Horticulture Development Agency they couldn't give us clear information on what they are doing to support female farmers although they were claiming to do so. The representative of the Agency referred to the code of practice where gender issues are addressed under social aspects. He told us that there were trainings for the companies regarding gender issues but couldn't give us any details on what these trainings included. One point he mentioned was pregnancy leave for women. The trainings are not given directly by the Agency but by the Ethiopian Horticultural Producers and Exporters Association. (Interview 42)

Another problem that hinders the provision of relevant information especially in rural areas is the lack of communication infrastructure (UNICEF 2012). According to the Extension Agents we interviewed there are only a few farmers that have access to telecommunication, neither the use of cellphones nor of radio or television is very common (Interview 30). As access to telecommunication is also affected by the ability to afford electronic devices women are disadvantaged in this area as well.

Supporting markets

Several studies show that agricultural extension services in Ethiopia so far were not yet able to address women's needs adequately (ELIAS et al. 2014, GEBREMICHAEL 2009, OGATO et al. 2009). 70.7% of men working in agricultural production seek help from extension services whereas only 15.8% of the female agricultural workforce use extension services. (ELIAS et al., 2014). The cultural taboo in terms of the participation of women in some of the agricultural working tasks is still a problem which could also not be managed by the extension service. The major effort is given to men as they are still seen as the main actors in agricultural production while women`s role is still underestimated (OGATO et al. 2009b). Extension workers often are not motivated to work with women due to their low agricultural responsibility, skills and their limited productive assets (ELIAS et al. 2014). Especially women in MHH are by-passed in the dissemination of information assuming that the men will transfer the received knowledge to their wives, which is usually not the case (ELIAS et al. 2014/EARO 2000 cited in GEBREMICHAEL 2009). Most of the women who attend agricultural extension services are therefore household heads. In addition to this the provided service is also men dominated who rather work with male than with female farmers (NGATWA 2006 cited in GEBREMICHAEL 2009). The Development Agency we interviewed employed 90 male and only 10 female extension workers (Interview 30). ELIAS et al. (2014) even identifies the attitude of extension workers as the major factor hindering women's participation in agricultural extension service. Field evidences show that the lack of technical advice on production and marketing, cultural practices, skills and technology is jointly responsible for the low farming productivity and efficiency levels of women (ALMAZ 2000 cited in GEBREMICHAEL 2009). The representatives from Solidaridad and the catholic NGO both affirmed that the development agents from the government do not have the necessary specific knowledge and often they lack incentives for doing a good job (Interview 17, 43).

According to representatives from the LIVES project there was a women development service from the Extension Agency, which is a specially designed package for women. It was designed by the Ministry of Women, Children and Youth Affairs and has yet to be implemented by the district administration. (Interview 25)

Many cooperatives include male and female farmers but men hold the big majority of members in most cases. In these mixed cooperatives women often face disadvantages, for example when it comes to voting procedures. The representative from Solidaridad

explained that as "*each vote is related to a piece of land*" and as in most cases men hold the right to the land, it is them who get to vote and make the decisions inside the cooperation. (Interview 17)

There are some cooperatives especially for women. One example is the cooperative ABINE which includes a vegetable and fruit collection and selling center. It exists since 15 years and has 83 members out of which 80 are female. One of the 3 male members is the auditor while all other important positions are held by women. The cooperative buys vegetables and fruits from farmers and in few occasions from traders and sells them in their own little shop. As the selling was not very lucrative in the past, the members were thinking about a new strategy of increasing the shelf life of their products by processing – such as the production of berbere or dried peppers. They were supported by Oxfam America and the Ethiopian Government. The benefits for the members constitute in access to credit, trainings for vegetable and fruit cultivation as well as business trainings provided by Oxfam and the Development Agency. (Interview 20)

Research institutes also try to integrate the gender issue. We talked to the ILRI LIVES project where we were told that gender in the value chain was a critical component of the project. They stated that Ethiopia is a special case as the land rights are not as clear as in other African countries. The representatives confirmed that legally every household has a set of land and both parties of the household, husband and wife, have the same access and right to land if the land is registered under both names. Therefore production should be a collective household decision. (Interview 25) Unfortunately in practice this is often not the case as we noticed during our numerous farm visits and during the interviews we conducted with male as well as with female farmers. In most cases the land was registered only under the man's name (Interview 12, 16, etc.).

In the LIVES project they had a target of reaching out to as many MHHs as FHHs. But as there are not enough FHH this goal is not achievable at the moment. Therefore they focus on couple trainings to enlarge the number of participating women. They state they want to train farmer couples together because farming is seen as family business and therefore both members should be trained the same way. According to the project representatives the male participants in the training reacted mainly in a positive way towards this ambition. (Interview 25)

Enabling environment and supporting markets:
- NGOs and governmental extension services face difficulties in reaching women through agricultural trainings
- Women themselves do not recognize themselves as important contributors to the household's farm work
- Traditional support systems and cooperatives play an important role, especially for female headed households

Producers

Smallholder farmers:

Figure 48 Female household-head in front of her field

In our study-area in most of the households women were not registered on the land, but they were still contributing major parts to the success of the farming activity. Our findings concerning the labor distribution on farm level confirmed the literature findings: women mostly engaged in traditionally accepted activities such as seedling preparation, watering, weeding, harvesting and looking after small ruminants or chickens. Men were responsible for the heavier manual tasks such as land preparation and tillage with oxen. Women were allowed to help with the land preparation by using simple hoes, but the plough remained reserved for the men in a community. One female small-scale farmer told us that it was a common belief that "*if a woman would use the plough the rain won't come*" (Interview 16). Nevertheless one female household head stated that she would prepare the soil through tilling and that she could do everything a MHH would do. "*But there are rumors and envy from men*." (Interview 34). Another female household head uses her sons or hired labor to help her with the ploughing (Interview 13). Such traditional customs that still subsist add extra burden onto the shoulders of a FFH.

All interviewed women were responsible for housekeeping, childcare and substantial parts of the horticultural production. This was difficult not only for FHHs: During harvest time it was very challenging for a young female farmer to provide enough food and drinks required for the farm-hands that would help them through *dabo*. *Dabo* is a long-established system, where landless young men or other smallholder farmers help out gathering the harvest. They are not paid in money but plenty of food and drinks should be provided for them. Catering a large group of farm-hands can be very challenging for the women of a household (Interview 16). A female household head also stated that field work and harvest time were difficult times for her, especially when the children were at school it was very hard for her to cope with all the farm work: "*I'm on my own with monitoring and supervising everything – my eyes have to be everywhere. Especially in harvesting times I'm not happy. Everything is harder for me than for a woman in a MHH, as man and woman usually can help each other.*" (Interview 34). Whereas the women in FFHs clearly saw their own impact on the success of the farming operation. Some women of MHH were not aware of them being an important contributor to the household's horticultural production's outcome. They mainly saw themselves as having only supporting roles (Interview 30).

During our research we met many women with very different backgrounds concerning their upbringing, access to resources or education. We met female smallholder farmers who lived very traditional lives - but we also met women who enjoyed equal rights in their marriage. We met young and old couples who were sharing their daily workload but also others that did not. Those immense contrasts and the heterogeneity of our research subjects show that the results of our study might not apply to all female smallholders in the vegetable value chain. Nevertheless we noticed that for women in MHH the ability to negotiate and elaborate on their opinions was crucial to secure their position in the household. Thus education of both, women and men, and their relationship to each other - maybe also love - seem to be essential for a fair and equally distributed allocation of responsibilities on the farm. (Interview 11, 16, 21)

Smallholder farmers:

- the daily routines and the agricultural duties of women are limited by very traditional role-models
- men own most of the resources
- the intra-household power relationship heavily depends on age and education of the couple

Semi-commercial farms: According to our observations, land ownership and land registration on semi-commercial farms is on the head of the household which was always the men. However, on one of the farms the farmer told us that this status is about to be revised and registration will soon consider both, wife and husband (Interview 27). On another farm the wife of the owner was highly involved in all management and administration activities. This statement was not only made by the farm owner himself – "*She is involved in almost every activity; without her the farm would not work.*" (Interview 36) – but could also be observed during the farm visit, where it became very clear that the wife had an important role within the management of the farm.

Depending on the season the number of women working on the farms differs a lot. As farmers prefer women for activities that require a more careful handling, during harvesting time there are up to 50 percent women (sometimes even more) working on the farms. Women are also preferred for activities such as transplanting seedlings and planting but they also do digging and weeding. Women and men are supposed to earn the same amount of money for the same job. But since there are activities which are mostly done by women like planting and harvesting they are paid differently in a way as typical men activities are usually paid a lot better.

Semi-commercial farms:

- involvement of women in the management of the farm highly dependent on the couple's relationship
- gender sensitive activities: women are employed mainly for the harvest of green beans or seedling transplantation

Commercial farms: In the context of the large scale production of vegetables in commercial farms, women are mostly found in the production part rather than in leadership positions. At the VegFru commercial farm in Meki all leadership positions were held by men. Only two women with bachelor degree were employed as supervisor on the farm. Similar to semi-commercial farms harvesting - especially of beans and peas - is mostly done by women (here 80 %). As planting on the commercial farm is done mechanically by machinery it is not considered as a work for women anymore. Only men are allowed to operate the heavy machinery, because it is seen as "hard work" (Interview 28).

In terms of social security issues the women at the commercial farm are better off than female workers in semi-commercial farms. Permanent workers are allowed to go into a pregnancy leave for one month before and one month after the birth of the child, but they are still not getting paid during this time - as it is stated in the Ethiopian constitution (see chapter 4.1.4). (Interview 28)

Commercial farms:
- women in leadership positions were not to be found
- social security situation of women is marginally better than at small-scale level

Processor

Women play a major role in the processing of vegetables. As we observed at the onion processing center of Meki Batu Union, there are mostly women employed, and men were only hired for physically hard work such as loading the vegetables on vehicles (Interview 22). In Ethiopia sorting, cleaning and peeling of onions is seen as a typical task for women. Especially peeling, which is considered a very hard work due to the acidly juice of the onions, is exclusively done by women. The very surprising justification for this division of labor given by the Professor of Haramaya University was: "*...women are used to these chemicals anyway due to their homework.*" (Interview 22)

All the women we interviewed were employed permanently at the Meki Batu Union. To become a peeler for onions, which is the lowest position, it requires at least grade 8 in school. Washing of onion is seen as a more comfortable activity than peeling, is better paid and mostly done by better educated women. (Interview 15)

Compared to farm work, the social security situation for women was better at the Meki Batu center as permanent workers were not only allowed to take 3 months of pregnancy leave but also for sickness. This even applied to temporary workers, although they were not being paid during the pregnancy leave (Interview 23).

Processors:
- women play a major role in the processing of horticultural produce

Traders

Wholesalers: When conducting our interviews we couldn't find any female wholesaler at the vegetable markets we visited which confirms the assumption that this stage of the value chain is dominated by men.

Roadseller: Along the roads there were a lot of vegetable sellers of which many were female. They mainly sold onions, potatoes or tomatoes. All of the road sellers we interviewed were selling additionally to being farmers themselves. Some of them sold their own products others sold vegetables they bought on the markets nearby (Interview 14) but all of them had in common that they couldn't make a living only from farming or road selling.

One of the women claimed that most traders were male but that the gender didn't really matter and that there is no competition between the sexes. According to her the farmers don't care whether they sell their products to a male or female trader and that good negotiation skills are far more important (Interview 18).

Retailers: Differently than in other parts of the value chain between male and female retailers there could not be found any significant differences.

Traders:
- we did not encounter any female wholesalers
- roadsellers and retailers were positions often obtained by women

Input supplier

Agrochemicals: Most of the input suppliers in Meki were run as family businesses - women and daughters also got involved through selling in the shops but the control over the resources lied within the hands of the head of the household. (Interview 19, 29) Their customers were also female and male small-scale farmers.

Labor: At the labor-market in Meki we encountered a lot of strong women and men waiting for employment. Labor as input seemed not to be scarce, plenty of female and male Ethiopians were waiting for being hired as farm-hands. We focused on interviewing female labor-seekers: Most of the women were hired on a daily basis to assist farmers with harvesting their produce. Brokers, permanent farmhands or the farmers themselves would come to the labor market early in the morning and pick the laborers needed for the day. Sometimes they would pick one laborer who they value a lot and make her choose up to 20 workers she regards as skillful to work with her for that day. At the labor-market

women and men equally try their luck with finding employment - according to the women there was no competition between male and female laborers as on-farm activities are usually gender specific. (Interview 9) Women engage most in the harvest of green beans, peppers, the transplanting of onion seedlings or weeding. With those jobs women earn 40-50 Birr/day. Men were paid 60-70 Birr/day. (Interview 33) Most of the women interviewed, mentioned that harvesting green beans was their least favorite job, nevertheless most of them do it: the question that arose out of that was whether women would do those jobs as farmers explicitly requested women or because men refused to do jobs like that. If farmers would value the work of the women as much as they said they would they'd compete over skilled women and women's wages would probably be higher. Thus women working with green beans must benefit by a niche created through the refusal of men doing jobs that require gentle treatment of the produce. Men might not want to do those jobs, farmers can employ women who they can pay less and whereof plenty are seeking for jobs. Most of the women we spoke to had only marginal education and mentioned they were looking for better jobs as it was hard live on the money they earned with the farm jobs. Women mentioned they had no access to contracts, insurances or other kind of securities. But there was a strong feeling of solidarity between the women: one woman mentioned she was sometimes denied her payment which usually results in all women gathering and going to the farmer or the police station to demand for the payment. (Interview 9)

Input suppliers:

- women are involved in the selling of agrochemicals
- many women were to be found at the labor market
- women have no job security and due to gender sensitive activities they do often earn less than their male counterparts

Testing the hypotheses

Our findings are not necessarily representative for the situation of women living in other regions of Ethiopia or working with different value chains. However, our hypotheses regarding the role of women within the vegetable value chain were fully confirmed by our observations in the Rift Valley.

Women along the whole value chain are disadvantaged in terms of physical, capital and social resources, which forces them to leave more lucrative positions to men. This

becomes particularly obvious on the wholesale level, which is dominated by men. We did not meet any female wholesalers. In semi-commercial and commercial vegetable production women are not to be found in any leading positions.

As stated before women have less access to extension services and are not benefitting as much as men do - that confirms our second hypothesis. All relevant institutions and actors are aware of that problem, but short-term solutions are difficult to achieve as traditional role concepts persist.

Regarding our climate change hypotheses we found that women face greater challenges when coping with a changing climate. Women are especially vulnerable compared to men who have greater access to extension services and new technologies and can therefore better adapt their farming techniques.

Women are strongly contributing to value generation at all stages of the value chain. But society in general and women in particular do not acknowledge the importance of female stakeholders in the vegetable production. The importance of women in agriculture should not be underestimated as an empowerment of women in terms of education and economic participation can lead to economic benefits for the whole community (WORLD BANK 2009).

4.3.2 Climate Change

As we have discussed in chapter 3.3.3 climate change in Ethiopia affects agrarian production in the following ways:

- Increase in temperature
- Change of habitats and introduction of new pests and illnesses
- Change of precipitation pattern
- Pressure on water resources

In order to maintain a reasonable structure the sequence of the levels of the value chain are followed in this section as far as they are concerned by climate change. All four levels are embraced by the so-called enabling environment, which one has to understand to be able to fully comprehend inefficiencies.

Enabling Environment

Government

The government calls itself committed to the fight against climate change. The country's constitution contains several articles relating to environment. One is §92 "Objectives for

Environmental Protection" which aims at sustainable development and growth with consideration for the environment (Interview 32, ABYSSINIA LAW 2015). Several guidelines to combat the effects of climate change exist. The main program is "Ethiopia's Programme of Adaptation to Climate Change" (EPACC) and one goal is to build a climate resilient green economy (CRGE) through support in terms of adaptation at the sectoral, regional, and community level (Interview 32).

The main aim that concerns climate change is to reduce greenhouse gas emissions, the CRGE aims at development without an increase in emissions. Ethiopia is to reduce its net GHG emissions in 2030 to 145 Mt CO_2 or lower. This would constitute a 255 Mt CO_2 reduction from the projected "business-as-usual" (BAU) emissions in 2030 (Interview 32). International financing is strongly fostering this reduction and financial aid is depending on the fulfillment of these targets, for example USAid (FASTSTART FINANCE 2012) and the 50 million USD funding from the GCF (MINISTRY OF FOREIGN AFFAIRS 2011).

The government wants to meet these objectives by protecting and reestablishing forests, promoting and fostering mechanization to replace conventional tillage systems with draft animals, establishing wastewater management systems for livestock production and replacing traditional fuelwood usage with renewable sources of energy (Interview 32).

Furthermore, the government is well aware of the soil related problems and severe land degradation and nutrient depletion. According to the government reasons for this are the "complete removal of crop residue from the fields, fragmented or no application of Integrated Soil Fertility Management (ISFM) technology, little or no manure application, imbalanced inorganic fertilizer use; and lack of comprehensive soil fertility information" (ATA 2014).

The government promotes zero/minimum tillage and sustainable irrigation. It is working together with research institutions such as Wageningen University to estimate potential of green manure and general best practices in crop production and to establish a soil information system called EthioSIS (ATA 2015a; WAGENINGEN UR 2015). Currently, the land tenure system facilitated by the government and authorities is based on lease and not on ownership and water can be extracted for free, therefore farmers are not encouraged to cultivate their land sustainably as they have no security to keep the land.

NGO

The NGO Meki Catholic Secretariat (MCS), is well aware of the bottlenecks and issues of the Ethiopian agricultural sector. Irrigation is one of the main topics on their agenda in battling the implication of climate change and their main climate change adaptation and mitigation strategy. Other problems that were mentioned by the representative of the NGO were high salinity in the groundwater, water pollution because of mishandling of agro-chemicals and ineffective use of water for irrigation (Interview 43).

The approach of the organization is foremost to empower people by providing trainings in how to use the technical equipment instead of just providing it. One example that has been put forward during the discussion at the MCS was the planting along irrigation canals to prevent erosion or the emphasis on biological methods in pest management schemes in order to preserve soil and water resources.

The second NGO Solidaridad primarily focuses on income generation and food security via means of supply chain development. As the organization started in Latin America they can use the experience they made there to apply in Ethiopia. Concerning climate change the focus is set on water harvesting, watershed management and more efficient irrigation schemes. The issue of polluted and overused water of Lake Ziway is well known and a sustainable landscapes project has been initiated (Interview 17).

Input supply

Pest Control

We used a very broad definition of input supply and included irrigation and the provision of goods such as agrochemicals and seeds, labor and knowledge. Often there is a combination of inputs supplied, e.g. pesticides are being provided in conjunction with the service to meet the customer in the field where a direct assessment about the right chemical, the appropriate handling, the amount of chemical and the security precautions are given (Interview 7, 8, 19). Agrochemical providers mentioned that farmers are asking more often than before for pest control against the Tomato Leafminer *(tuta absoluta)* as the moth occurs more regularly on the fields than before and depredates harvests (Interview 8). This was confirmed by farmers (Interview 2, 27) and can directly be associated with changing weather conditions, all in all bringing up issues such as more expenses for pesticides, more pressure on natural resources due to increased application of chemical input and higher losses on tomato harvests. Studies like the one by TONNANG and his colleagues (2015) support these subjective impressions. Independently, the

Tomato Leafminer has also been brought up by the scientists of International Livestock Research Institute (ILRI) (Interview 25), who stated that it has devastating effects on harvests but indirectly also on soil and water bodies as uneducated farmers tend to overuse pesticides and pest control chemicals in fear of losing income due to failed harvests. Merging the different statements, it can be said, that climate change does indirectly influence the vegetable value chain by paving the way for invasive species through changing abiotic factors. In the long term this will lead to decreasing environmental health.

Seeds

Farmers and input suppliers tend to increase and adapt fertilizer and pesticide use, instead of using appropriate and adapted seeds. While Ethiopia has a naturally great genetic diversity in crops (BALEMIE/SINGH 2012), this diversity is shrinking due to introduction of so-called improved seeds varieties (BAYUSH 2007). Local seed varieties are oftentimes better capable to handle adverse conditions, which makes them more reliable for farmers (BALEMIE/SINGH 2012).

Knowledge

Knowledge input is important in order to be able to meet climate change's challenges. There is a drastic need for education on appropriate and efficient water usage, adapted pest control and fertilizer use. Smallholder irrigation schemes in the Rift Valley are overexploiting natural water resources with questionable economic gain (VAN HALSEMA et al. 2011). Farmers are worried about the water resources and demand government intervention to gain control over extraction rates (Interview 36). The Ethiopian Government is trying to spread information and appropriate farming methods via a massive number of development agents, with measurable impact on the livelihoods of farmers (BOGALE 2012).

Climate information system

Farmers are often without any access to modern information distribution channels to gain simple knowledge about weather forecasts. In the worst case this reduces productivity.

The ATA admits to the fact that the National Meteorological Agency´s (NMA) weather and seasonal climate forecasts on regional scale are not able to provide a weather service matching farmers' demands. In line with the objectives of the ATA our observations confirmed that farmers are in need of improved access to weather information which is locally specific and timely. Other interventions such as improved seed varieties might

otherwise be inefficient. Most important when improving climate information services, is decentralization to be closer to user needs. A simple method is the installation of rain gauges to document rainfall on a very local level. If accepted and applied correctly farmers do not have to exclusively have confidence in traditional crop calendars for planting times and irrigation but can react more flexibly to changing rainfall patterns (ATA 2014).

Irrigation

Figure 19 Inefficient water use, example of water pump connection

The most important water bodies for irrigation in the area are Lake Ziway, Bulbula River, Ketar River and Meki River. The irrigation schemes employed on the producer level are almost exclusively limited to furrow irrigation (HENGSDIJK/JANSEN 2006). A study by BELAY and BEWKET (2013) found that over 90% among 126 irrigators in the Ethiopian highlands used furrow irrigation to water their fields. Only at the more advanced levels, more sophisticated irrigation techniques like drip irrigation were employed. This corresponds to our observations and is an important issue, as the water use efficiency of the primitive irrigation systems is very low due to high levels of evaporation and seepage leading to great amounts of waste water.

Another problem obvious on several farms was the miserable condition of many of the irrigation schemes, lack of appropriate maintenance and spare parts for pumping equipment as well as simple engineering know-how. The Batu Irrigation Union is using a scheme built in 1985 by a North Korean partnership. It has never been properly maintained or repaired and is currently supplying only 700 ha of farmland while its original capacity was 3000 ha. Out of nine pumps only three are functioning (Interview 26) and the basin the pumps are drawing water from is grown over by plants. The overall condition of the pump house can be called very poor. The farmers are dividing the

irrigation time among the association's members. They are nevertheless still heavily dependent on rainfall (Interviews 2, 3, 13).

Almost all water used for irrigation is surface water, groundwater is still very little developed (see section 4.1.1.6), though some of the farmers mentioned to use it (Interview 36). The Batu Irrigation Union, to which many if not all farmers in the area around Meki belong, does not live up to its promises and the farmers perceive it as working inefficiently (Interview 2, 3, 13, 34, and 39).

Figure 20 Failed Maize outskirts of Shashamene

Production Level

In the following the interlinkages of climate change and the producer stage shall be described. The issue of newly introduced pests was already discussed above, but irrigation is possibly the most important aspect for horticulture farmers. Access to irrigation schemes and their proper functioning are crucial points for meeting the challenges of climate change (Interview 11, 12, 13, 27, 28 and 36). The use of irrigation schemes helps to compensate for low levels of rainfall that occur more and more frequently.

We were able to talk to three farmer families living in Shashamene, outside of our study area who are not able to enjoy the benefits of being located close to a large water body which can be used for irrigation systems. Thus, their susceptibility to become food insecure is higher than that of the farmers in the surrounding of Meki municipality (Interviews 4 and 21). The farmers in Shashamene were the only ones to have received food aid in the past. Erratic precipitation patterns cannot be counterbalanced by drawing irrigation water, making them more exposed to the ramifications of climate change. In 2015 the rainy season started only very late, leading to losses in maize production (Interview 2, 4, 13). Another farmer is living in the study area but not practicing irrigation (Farmer 1 in Interview 2) and therefore reported similar experiences. They are much more

susceptible to weather irregularities and are much more likely to see income shortages due to failed harvests.

Although the extraction of irrigation water is free of charge for small scale and semi-commercial farmers, they have to pay for the electricity for pumping, thus cutting into their margins.

Figure 21 Poor condition of basin pumps of the pump house

The year 2003 was the last year with a late rainy season like in 2015. Individual reports of endangered livelihoods were gathered and, alarmingly, small scale farmers do not think that a famine such as the one in year 1984 is unlikely to happen again, which illustrates the miserable situation of many and the crucial importance of irrigation (Interview 2). When asked, which mitigation strategies are employed by the farmers, diversification, saving and the use of robust seeds were mentioned, but especially poor farmers lack access as they can simply not afford to pay for them (Interview 2, 38). Further, the complexity increases with diversification because the farmers have to look for workers with different skills according to the different crops that one seeks to plant (Interview 38) which turns out to be difficult because of the low educational level of many day laborers. Other mentioned mitigation strategies include diversification of crops (including rainfed crops), keeping livestock which acts as a “living” savings account and extension of crop land.

Another point is the state of soils. Sometimes farmers have to desalinate them (Interview 36). Water erosion is a problem even on fields with well adapted irrigation schemes as we witnessed on the Genesis farm, where severe gully erosion could be seen on fields that were sloping downwards to a local water body.

Figure 22 Gully erosion at Genesis Farm

Many of the farmers that were interviewed during the fieldwork were aware of the issue of climate change but when asked if they considered changing their profession, denied ever thinking about leaving the agricultural sector, mainly due to a lack of opportunities in other professional fields and bad living conditions in the cities (Interview 2, 3). One farmer in Shashamene mentioned water harvesting as a mitigation strategy (Interview 21) but apparently this is not fostered by cooperatives or DAs.

Evaluation of the Hypotheses

Here, we will come back to the hypotheses stated before and check how our findings suffice to answer them.

Summing up the most important findings:

- Concerning temperature change, the subjective statements by the farmers during our field work confirmed the findings in the literature that temperature is rising continuously.
- The change of precipitation pattern is the greatest issue in the productivity of farmers, failed harvests and low yields are commonly experienced
- The increased stress on water resources is becoming a threat to the farmers as the form the basis for their irrigation systems
- The arrival of new pests and illnesses was mentioned by farmers as well as by researchers and input suppliers

First, we suspected climate change to negatively affect the reliability of yields for small-scale farmers. This has been shown to be true. Even though it is difficult to establish reliable weather data dating back for at least 30 years in order to document a scientifically appropriate change in a region's climate, weather changes and associated anomalies in precipitation patterns have been clearly stated.
Comparing farmers with and without access to irrigation, we have seen that those dependent on rainfall are more susceptible to crop failure. Our second hypothesis "Communities with low food security are more exposed to climate change than communities with higher food security" can therefore be substantiated.

As we have shown above, farmers, even at the lowest hierarchical level are aware of mitigation or adaptation strategies. What keeps them from engaging in those strategies is most often limited financial capacities and lack of appropriate and adapted labor and skills as an input factor. Therefore, our third hypothesis that knowledge in the field of adaptation to climate change in agriculture communities is limited, can only partly be asserted.

4.3.3 Income Generation

4.3.3.1 Synthesis of Observations during Field Work

Our first hypothesis deals with price fluctuation and income instability, stating **"farmers involved in vegetable production face high price volatility"**. All farmers interviewed by the income generation group confirmed this statement:
They describe their income situation (of vegetable production) as fluctuating and unstable (e.g. Interviews 35 & 38). One farmer illustrates this fact by the following example: He planted tomatoes in the last two seasons, each time when he decided to crop tomatoes the market price at that time led him to calculate with an expected price much higher (eight and ten Birr respectively) than the actual price (two and one Birr) at which he sold his harvest eventually. Furthermore, they relate emergency situations that required alternative cash sources (Interview 21) as well as the experience that they had to use their savings to finance the following season because of the losses in the last seasons. The latter applies to the same farmer who grew tomatoes twice in a row, he is now growing cabbage because of the lower input costs and still has to cover the expenses drawing from his savings (Interview 39). As a consequence of the virtual lack of stability, farmers plan for future capital needs and use "*savings from a good year as buffer in a bad year*" (Interview

40). The reasons for income amounts that do not match the costs of production are varied, differing from season to season (Interview 34). In addition to instability due to the market nature (price volatility), farmers also have to be prepared with regard to disasters such as droughts and pests resulting in future capital shortages (Interviews 34 and 35).
In conclusion, some interviewees consider vegetable production a difficult business (Interview 34): "*income from vegetable is like a lottery when it comes, it comes with big reward. With the price gone down it is horrible*" (Interview 39).

In addition to the interviews, we were able to observe on the markets that the cause of price volatility is not so much to be attributed to overproduction but rather to weak market linkages and the farmers' lack of information as well as a disregard for other stakeholders' actions. An example of the weak market linkage was presented to us by the price difference of tomato in Oromiya (our study region) and Tigray (as related by a fellow Ethiopian student) at the time of our field research. With regards to context-specific information relevant for the cropping decision the following shall serve as an example: The Development Agents provide a cropping calendar with the intention that farmers plant other crops than their neighbors so that when the harvest approaches, they do not all harvest the same kind of produce at the same time, which would drive down the price.
In spite of this service, farmers appear to prefer the current market information and experience of their social network (Interview 39): The cropping calendar is not adopted, instead, when deciding what to grow they base their decision on an estimation of the expected price according to the current price, even if experience had taught them otherwise, as well as costs of production (e.g. cabbage production is less cost-intensive than tomato, see Interview 39).
We consider hypothesis one proven, yet, it has to be stressed that the reasons for the price volatility are diverse and some could certainly be mitigated if the production conditions changed.

Income Diversification & other Coping Strategies

Acknowledging the verification of hypothesis one begs the following question: How do vegetable farmers cope with this income insecurity? As per our hypothesis two, we claim **"farmers involved in vegetable production diversify their income sources"** which we consider one strategy to deal with income insecurity.
During our fieldwork, first of all, we learned that the farmers are aware of the risks associated with vegetable production and the resulting income instabilities (e.g.

Interviews 34, 38, 39, 40). According to the findings drawn from the conducted interviews to deal with income instability farmers rely on a set of coping mechanisms including savings, diversification of production and income and, if accessible, credits to mitigate the impact of losses in vegetable production and to finance the next season (Interviews 38 and 39).

Consequently, if possible small-scale farmers save excess income at the bank (e.g. Interview 40). Saving is encouraged by the government that founded the Oromia Credit & Saving Share Company to contribute to that objective (ibid). Apparently it was claimed that farmers save on average 1000 Birr per year (Interview 2). Regarding credit access it has to be pointed out that access is generally limited. Nevertheless, the following experiences were shared: While in some cases the unions/cooperatives offer financial credit (Interview 41) or advance input supply without immediate payment (Interview 38). Also one input supplier is granting credit in the form of supplies, yet, that seems to be the exception (Interview 31). In other cases the situation has worsened since cooperatives stopped to grant farmers credit and consequently they now have to rely on private investors who demand interests on the granted loans (Interview 2). Specifically two options were named: Either take out a small loan with low interest at the Oromia Credit & Saving Share Company or take out a big loan with high interest at a private institution such as Busagunoofa (Interview 38). Apparently, access to (micro-) credit was satisfactory (ibid).

Moreover, small-scale farmers pursue income diversification by means of crop production, livestock as well as other, off-farm income sources:

Five of the interviewed small-scale farmers are also supporting their livelihood as roadside-sellers (Interviews 4, 5, 21, 34, 35). They sell their own produce as well as crops they bought from neighbors or other farmers in the region. Here, it is actually the roadside-seller that is the beneficiary of the producing farmer because she receives the produce without advance payment; instead she pays the farmer only after she sold the produce herself (Interview 34). In some cases the interviewed farmers earn off-farm income as daily laborers on other farms (Interviews 14 and 34). They explicitly refer to the reduced vulnerability of their farming income (e.g. Interviews 21 and 40) as compared to other farmers that cannot rely on additional income sources.

While it is recognized that diversified vegetable production in one growing period reduces the risk exposure with regards to unexpected price changes of one crop; only a limited diversification within vegetable production, i.e. mainly one vegetable crop per season,

was observed. Apparently, this strategy is usually not pursued. The risk of not doing so is accepted and inter-harvest diversification (crop rotation, e.g. Interview 34, also to maintain soil fertility) is preferred. This is due to the additional costs faced, more complex management and economies of scale, when diversifying in one growing period (e.g. different employees have to have more and differentiated skills that are applied to a reduced amount of crop on a reduced area of land) (compare Interview 38). However, all interviewed farmers are not only involved in market-oriented vegetable production, but complement their livelihood by cultivating cereal crops (usually teff, maize, wheat) for their personal consumption. In case that the harvest from the above-mentioned crops is in excess of their needs it can be used to manage risk and supplement income (Interview 38).

Moreover, in addition to their farming activities all farmers interviewed by the income generation-focused research group either possess or used to possess livestock. The prevalent livestock kept is cattle, followed by oxen used for farming activities (compare inter alia Interviews 5, 13, 40). But also poultry, donkeys, small ruminants, goats and sheep were named. Livestock fulfills various functions. Most importantly, livestock increases resilience to income shocks, i.e. financial losses due to harvest loss or prices below the break-even point (Interview 40): In case, the profit margin by the vegetable production does not cover the (livelihood) costs or worse still the income generated does not even refinance the costs of production, livestock can be sold in order to buffer the impacts of the risks inherent to vegetable production as was done by a farmer in an emergency case (Interview 21). Moreover, it may contribute to household income on a regular basis, e.g. sheep kept for reproductive purposes (Interview 34), on the other hand; on the one hand it complements household nutrition.

Concluding, the presented findings verify our second hypothesis that **"farmers involved in vegetable production diversify their income sources"** in order to deal with risk. Nevertheless, the observations made above limit the validity of the statement to diversification by means of a set of coping mechanisms complementing vegetable production and largely exclude diversification of the vegetable production.

Market access and market information

In advance of our fieldwork we formulated our third hypothesis that **"lacking market integration and infrastructure lead to dependency on market intermediaries and loss of income".**

And indeed, farmers express dependency on market intermediaries: They generally regard brokers as powerful as they have the information the farmers need and may misuse it to their own advantage (Interview 41). Different from relationships to input suppliers that tend to prevail relationships between farmers and brokers are usually not long-lasting but temporary: For instance one interviewed farmer explains that he has no regular broker but goes to the town's market to find a broker with a good price when the harvest time approaches. He then communicates with three to four brokers before picking one. (Interview 38)

Nevertheless, this strategy does not seem to be very representative, because most farmers stress their dependence on the brokers' decisions and do not feel confident about their bargaining powers (e.g. Interviews 2, 35 and 39). Instead traders and brokers negotiate the price (Interview 35). All farmers including those that try to negotiate an appropriate price feel dependent on the brokers´ good faith in negotiating due to the perishability of their goods (Interview 38 and 39). Yet, one last resort or exit strategy is not to sell at an inappropriate price and rather to sell independently at the roadside (Interview 34).

All interviewed farmers comprehensively demand "solutions for the problems of brokers' big profit margin" (Interview 38), they see the brokers as the main problem because there is no other way of selling all their produce at once.

What is more, at present brokers play a key role to farmers' access to market information as farmers cite brokers as their main source of price information (Interviews 38 and 39), followed only by skewed, experience-based information they receive from neighbors and friends (e.g. Interviews 40 and 41).

The farmers' statements support our third hypothesis that **"lacking market integration and infrastructure lead to dependency on market intermediaries and loss of income"**. Therefore, we consider this hypothesis verified.

Input supply

The relevance of input supply conditions (access, availability, quality) becomes apparent when looking at the following:

With regards to water it was observed that official schemes were mostly out of order. Access to technical knowledge (e.g. maintenance of the motor pumps at irrigation cooperative) is demanded but not provided. Instead informal solutions are pursued, this kind of improvisation (temporary solution) creates additional transaction costs.

Concerning seeds, pesticides and fertilizer as inputs to vegetable production the following impressions were gained: It appears that suppliers sell more from year to year because pests' prevalence increases, the same holds for fertilizers (which is attributed to the decline of soil fertility). What is more, new diseases (insects and pests) become more prevalent increasing the demand for chemical inputs further.

At the same time prices for seeds, fertilizers and pesticides increase due to various reasons, among which are the limited number of importers supplying international production factors to Ethiopia as well as inflation (Interview 34). The two factors combined result in relevantly increased costs of production. The increased input supply costs translate into an increased investment into the production costs leading to an increase in risk as well as per ratio 'the higher the investment cost, the higher the risk'. This increase in risk requires adequate compensation in terms of marketing opportunities, which the present value chain in Ethiopia does not offer.

Employment opportunities along the VC

On the one hand, even smallholder farmers employ daily laborers (up to 20/day depending on task at hand). On the other hand, it has to be noticed that not all can afford to hire additional labor (Interview 21). Nevertheless, the job creation potential of small-scale farmers is notable. The labor requirement differs among crops (e.g. tomato is more labor-intensive than cabbage). Therefore, cropping decisions have an influence on labor demand at the daily labor market.

According to a semi-commercial farmer "*most laborers prefer temporary employment because of opportunity costs*" as the daily wage rates for temporary labor are much higher when compared to salaries in permanent contracts (Interview 36). Apparently, daily wages up to 150 Birr (if contractual) compared to monthly wages of around 1,000 Birr (compare Interviews 9, 27, 33 and 36).

Another interesting direct quote is from a broker (Interview 37) who claims that "*there is no better job*". The interviewee has an education in engineering; it is unclear whether there really is no alternative job opportunity than being a broker or whether the benefits of being a broker outweigh those of any other profession.

Further observations

Many farmers mentioned the lack of any processing opportunities for perishable vegetables and propose a processing plant as an additional outlet for their produce.
In their opinion this would help reducing the high post-harvest losses that currently remain a challenge.
Crop insurances as a mechanism to cope with income losses due to droughts is hardly known by farmers in the region (Interviews 38 and 39), whereas, according to the speaker of the marketing division of Meki union, drought insurance is indeed available.
It appears that solutions are expected from the government and there is generally little or no demonstration of own responsibility.
Besides, access to knowledge (extension) seems easier for semi-commercial/commercial farmers than smallholders.

4.3.3.2 Transaction Costs in Vegetable Production

Due to the observed value chain inefficiencies in the project area and the resulting transaction costs at the expense of small-scale farmers in particular, we take a more detailed look at the transaction costs and the problems at their core in the following. It also deals with our fourth hypothesis, that "**within the current market situation high transaction costs exist along the value chain**."

Attributes of transaction costs

As described in chapter 3.4.2 transaction costs have several attributes representing factors that are influencing transaction risks. In the following the attributes asset specificity (1), uncertainty (2), difficulty of performance measurement (3) and coordination problems (4) are applied to vegetable production in the project area.

Firstly, in the project area, there is not much evidence for **asset specific** (1) transaction costs for smallholders and other value chain actors. According to FAO data with around 160,000 ha of 36 Mio. ha of total agricultural land, the scope of organic farming, for instance, that is applied in Ethiopia is very limited (FAOSTAT 2013). Besides, other asset

specificities in agricultural production in the project area are not relevant for this study, but in general it can be stated that with the overall lack of formalities along the value chain, asset specificity would cause high transaction costs.

Secondly, the climate conditions in Ethiopia can be harsh and long periods of drought heavily increase **uncertainty** (2) in agricultural production being a highly informal sector. Vegetable prices have also been rather volatile in the past years, which pose a transaction risk to farmers when they want to sell their produce after harvest, ultimately leading to economic insecurity (Interview 34). Organizing in cooperatives for example may be a way to offer more stable prices to producers, but this requires a good pricing system that reduces price risk for both producers and buyers. Due to the high degree of uncertainty, farmers face a high risk with regard to future yield and income destabilized by price fluctuations (Interview 35). Concerning the aspect of frequency, in general, actors of the value chain attempt to build stable and long-term business-relations in order to reduce risks as well as to increase stability, but because of the given market structure this appears to be difficult (Interview 30). Input suppliers, for instance, decidedly seek to have regular customers establishing stable business-relations for the long-term perspective and economic security (Interview 23).

Thirdly, the farmers in the project area face high transaction risks that are influenced by **difficulties of performance measurement** (3) especially with regard to the produce spoilage and packaging for transport often taking place directly at farm level. Due to lacking formalities, buyers just take the produce that match their personal subjective requirements, take the produce assessed as good and leave the rest rotting at the roadside (see pictures below).

Figure 23 Wastage of tomato harvest

Figure 24 Sorting of Tomatoes

The latter is thereby converted into transaction costs of the farmers. Moreover, as observed at several market places like Addis Ababa and Meki, inconsistent scaling is another important reason for high transactions costs being caused by high search costs that incur because of the incomparability of prices. In this context, cooperatives and the ECX serve as a good example for reducing transaction risks by measuring quality and offering standard contracts for several quality grades (Interview 20).

Finally, the fourth attribute of transactions are the **coordination requirements** (4). Although vegetable production in the project area is relatively extensive with respect to inputs, (mechanized) labor input is crucial at harvesting time. If tractors are used as labor in many regions, its availability is often a bottleneck. If such key inputs are not available, it might increase the risk of harvest failure (in terms of quantity or quality). As observed at several labor markets, farmers often hire daily workers and do not take a long-term perspective by contracting skilled workers (Interview 9, 13, 27, 28). This not only leads to insecurities of the laborers themselves, but also to higher administrative and organizing costs for the farmers. Nevertheless, these transaction costs still outweigh contracted laborers' costs because of the cheap human work force in the project area. Organizing in cooperatives may solve this problem of coordination requirements by contracts that include the provision of inputs by the buyer. In this context, also the water supply is an important aspect and the respective irrigation schemes. Often farmers cooperate with other farmers or investors, in order to irrigate their fields with water pumps (Interview 26, 35).

Transaction costs may occur at every stage of the vegetable value chain, but also vary extremely with regard to their attributes and influencing factors in the given enabling environment and supporting markets.

Contractual aspects of transaction risks

As explained in chapter 3.4.2 transaction risks and costs are based on the three phases of achieving an exchange, also called "contact, contract and control". In generally, there is an enormous variety and complexity of mechanisms used by traders in Ethiopia making contract enforcement difficult increasing transactions costs.

Firstly, due to the given market structure and lacking transparency in the project area, transaction costs in the phase of "**contact**" (1) for gathering information for smallholders are high. Hence, because of the fact that there is no official pricing system or a delivered

reliable price list, farmers do depend on the brokers and the information given by them (Interview 30, 38, 40). With the help of (semi-) formal civil society groups, self-help groups and cooperatives, farmers tackle this problem and decrease transaction costs (Interview 2, 20). Secondly, in the project area, there is a high degree of informalities and informal or (semi-) formal agreements, which makes **contract** (2) enforcement difficult to implement, implying high transaction costs (Interview 20). Organizing in cooperatives or renting land to commercial farms may decrease them. Costs of negotiations for smallholders are rather high, because they lack access to information and thus, they do not have sufficient bargaining power (Interview 34). Thirdly, concerning "**control**" (3), there is a high degree of lacking monitoring and evaluation schemes in the project area as well as insufficient reporting systems, making transaction costs for control measures quite high. Nevertheless, informal agreements do not have enough legitimacy, so nothing can be controlled that was not agreed upon.

The value chain of fresh vegetables in Ethiopia is in its very nature extremely linked to high transaction risks and costs regarding its nature-related and policy-related transactions. Due to the six stages mentioned in chapter 3.4.2, from the planting decision to selling at the wholesale market, transaction risks and costs may arise at every stage and thus, increase the final product price for the end consumer as well as decrease the initial selling price at farmers´ level. Without any further value adding process products pass through unnecessary transactions. This is mainly due to the activity of intermediaries increasing the price by further transaction costs. Besides, agricultural development benefits farmers, small traders as well as consumers and inefficiencies are a major constraint to it. There is a plethora of intermediaries and small traders, consisting of numerous brokers, retailers, collecting agents, wholesalers etc. Moreover, most transactions are very small, there is only poor communication and transport, lack of standards, as well as weak institutions resp. the enabling environment and limited access to supporting markets, e.g. credit and extension services, leading to higher transaction costs. We consider hypothesis four, that "**within the current market situation high transaction costs exist along the value chain**", as proven, because of the observations of inefficiencies and problems mentioned above. In summary, these inefficiencies in agricultural development in the project area lead to high transaction costs causing a loss of net benefit to farmers. Problems like the activity of many intermediaries in the market and lacking formalities have to be tackled in order to decrease them.

Transaction costs reduction in vegetable production

There are several opportunities to reduce transaction costs in vegetable production in the project area with regard to the value chain. Every stage bears additional transaction costs that can be avoided. As one solution to that, we situated in our fifth hypothesis, that "**[i]n order to decrease transaction costs and to deal with market risks farmers organize in cooperatives**.".

As observed there are several more opportunities for transaction costs reduction, especially with regard to the **ICT** branch there is a high potential for reduction with only low effort. Firstly, communication via mobile phone may be promoted quickly and at low cost decreasing coordination costs. Secondly, Internet and other IT devices facilitate information access and decrease search costs, improving connectivity between value chain stakeholders. Some farmers do have access to telecommunication and may be informed regularly via official channels, but these are mostly commercial or semi-commercial farmers (Interview 27, 28, 36). In contrast to that, smallholders often handle problems of information and lacking knowledge by sending their children or other persons spontaneously to the neighborhood to inform them orally as it is tradition (Interview 34). Even though, they may possess a cell phone, have radio reception or television; the information transferred and given there might not be very trustworthy.

Another opportunity to significantly decrease transaction risks and costs are **cooperatives** and **collective action** by institutional arrangement to overcome, for example, high coordination costs. According to Rørstadt et al. (2007) transaction costs are expected to be lower, if agricultural commodities are mainly marketed through large cooperatives compared with delivery through local merchants and several wholesaler. There is a complex cooperative landscape in the project area, not only with regard to informal and (semi-) formal self-help groups, but also large irrigation cooperatives and water user associations (see chapter 4.2.4.5). Nevertheless, price volatility of fresh vegetable remains high and traditional forms of exchange still involve relatively high transaction costs (SITKO/JAYNE 2012). Such marketing challenges may be tackled via commodity exchanges, like ECX, a platform that brings together buyers and suppliers, also via organizing in cooperatives. According to GABRE-MADHIN and GOGGIN (2005), commodity exchanges stimulate market transparency and price discovery, and attenuate collusion, (speculative) bubbles and price volatility. They may also lower transaction costs by increasing the range of trading partners, by providing monitoring and

enforcement of standards and contracts, and by tackling conflicts via arbitration services (SITKO/JAYNE 2012).

Furthermore, most interviewees were asked whether they were members of a cooperative and how they benefitted from such a membership or not. The majority (two thirds) affirmed a cooperative membership. The interviewed farmers generally acknowledged benefits associated with such a membership but also identified serious shortcomings (Interviews 13, 34, 39) (see also chapter 4.2.4.5). Among the listed benefits arising from a membership are "supply of improved seed, fertilizer, chemicals" (Interview 2), access to technical training (Interviews 2 and 3) and market information (Interview 3). Most mentioned was the access to irrigation, which is attributed to the fact that many interviewees were in fact members of the Meki-Batu irrigation cooperative. In spite of the apparent benefits, some interviewed farmers rather referred to malfunctions and ineffectiveness of cooperatives (e.g. Interviews 13, 34 and 39). In one case, suspicion of corruption eventually even resulted in the withdrawal from the cooperative (Interview 39). The disillusion with the way the cooperatives work is demonstrated by the following exclamation: "When the cooperative started we all had high hopes about market access, appropriate market information, storage options and financial support, etc. We all think that the idea of a cooperative sounds really good in theory, but the cooperative is not helping as hoped" (Interview 2). Instead it is noteworthy that a number of interviewed farmers started to organize informally in order to resolve pressing issues such as broken water pumps and need for irrigation communally (Interviews 34 and 35).

Whereas a majority of the interviewed farmers indeed confirmed their membership in one or more cooperatives, the cooperatives' positive impact on their members' transaction cost and the market risks they face remains questionable if not disproved. In consequence, hypothesis five claiming that **"in order to decrease transaction costs and to deal with market risks farmers organize in cooperatives"** remains, albeit not falsified, without evidence.

4.3.3.3 Price Analysis of the Tomato along the VC

In this section we try to reproduce a tomato value chain from input costs to consumer prices based on the information we gathered during the interviews with value chain stakeholders from input supplier to supermarket employee including extensive market research on wholesale markets in Meki and Addis Ababa.

First of all, it has to be pointed out that prices along the value chain, including wages of daily laborers and cost of production, depend on the daily conditions, i.e. they fluctuate a lot.

In the following input supply costs, output, brokers' commissions as well as the tomato prices on every step according to the collected data are presented:

Input Supply Costs

During our interviews we received information on cost of input supplies that was somewhat contradictory:

While one farmer calculated that the cost of seeds to cultivate 1ha of Galila tomatoes at 20,000 (Interview 39: "30,000 Birr for 1.5 ha"), input suppliers (Interviews 24 and 29) provide figures from 1,500 to 1,600 Birr/sachet as the price for Galila seeds. With four sachets/ha these figures correspond with the 6400 Birr/ha stated by another input supplier (Interview 31). However, the farmer (Interview 39) actually states the same sachet price as the input suppliers when observing the incremental price increase over the last three years from 800 Birr/sachet to 1,000 Birr/sachet up to the current 1,500 Birr/sachet. Apparently there exist some knowledge gaps with regard to the correct application. Independent of this last observation, the per hectare purchase price that small-scale farmers face when buying from input suppliers is considerably higher than the price semi-commercial farmers face, which was listed at 1,000 Birr/ha (Interview 27).

With regard to pesticides we were given the information that Ampligo (Syngenta) is mainly used for tomato production, purchase price was given at 1,100 Birr/250 ml, and the amount required per hectare is 300 ml, ergo the cost is 1,320 Birr/ha (Interview 31).

It is difficult to assess the cost of water usage in vegetable production because our interviewees provided information on systems and conditions that differed a lot. However, one possible scenario according to interview 39 is that the irrigation cost (i.e. electricity for the pump) per harvest amounts to 400 Birr/ha (1,000 Birr/2.5 ha irrigated land) using a gravity-/channel-system.

As far as the cost of labor related to the production of 1 ha Galila tomatoes is concerned, we learned that tomato is quite labor-intensive: It requires 20 workers/ha per day for spraying, the workers receive a wage of 60 Birr/day and the crop cycle for tomatoes includes seven rounds of spraying (Interview 39). Another farmer referred to the current tomato price fluctuation due to which they reduced the wage they pay their workers from 70 to 60 Birr/day (Interview 33). For cultivating, weeding, and harvesting of tomatoes

farmers pay between 40 and 50 Birr/day that is around ten to eleven working hours (Interview 9).

The cost of knowledge necessary in the production processes was too complex to assess within the limited scope of our qualitative interviews.

The following table provides an overview of the input costs according to own calculations based on interview information as compared to the cost calculation provided in interview 38.

Output

Consequently, adding up the cost of given factor inputs required in the cultivation of 1 ha Galila tomato yields at least 16,520 Birr (excluding weeding and harvesting activities). For means of comparison one small-scale farmer describes the costs of production in detail summing up to 40,000 Birr producing 40,000 kg Galila tomatoes in one harvest on one hectare (Interview 38); which includes labor for two fertilizer sequences.

Input	Cost (Interview 38)	Cost (own calculation)
Tomato Seeds	10,000 Birr	6,400 Birr
Pesticide Ampligo (Syngenta)	15,000 Birr	1320 Birr/ha
Fertilizer	5,000 Birr	-
Irrigation Cost (example)	-	400 Birr
Labor*	10,000 Birr	>8400 Birr
Total	40,000 Birr	16, 520 Birr

*(only for pesticide/fertilizer application)

Table 7 Overview on Input Supply Costs to Grow 1ha Tomatoes

Regarding output other farmers calculated harvests of 160,000 kg from 1ha (400,000 kg/2.5 ha) (Interview 39) and 40,000-60,000 kg/ha (Interview 41). The first number ought to be regarded critically while the second is similar to the yield of the farmer in interview 38. This assumption would result in a breakeven point at 1 Birr/kg.

Broker Commission

According to the information we were provided by brokers (Interviews 6, 37 and 44) commissions vary: One broker (Interview 6) gets a commission per kilogram, which amounts to around 20 Birr per 100 kilogram (the kind of produce was not stated). Another broker (Interview 37) explains explicitly with regards to tomato that the current price is 2-3 Birr/kg and that his commission is 3-5 Birr per box (containing 58-60kg). This would imply that his commission is about 1.6 - 4.3%. The third broker simply states that he earns

250-300 Birr/day (Interview 44). One farmer claims to know the commission rates of his broker (0.2 Birr/kg2), which is equal to the statement made by the first broker. However, the farmer does not trust this figure to be correct but suspects it to be higher (Interview 38).

Another farmer claims that the broker fee is 1,000 Birr/car (Interview 41), which in the case of ISUZUs loading 5 tons amounts to 0.2 Birr/kg.

Tomato Prices

Thanks to our interviews with various farmers, other value chain stakeholders and experts, we know that the price of tomatoes is particularly fluctuating at the moment (Interview 3). The current farmgate-prices vary from 0.5 Birr/kg (LIVES coordinator) to 3-4 Birr/kg, which is contrasted by 7-8 Birr/kg last year (2014) (according to interview 40). Most figures given approximate 1.5 Birr/kg though.

Nevertheless, it should be noted again that there exist high discrepancies between the expected and actual prices (Interview 38), one farmer expected a price greater than 10 birr/kg and eventually had to sell at 1.5 birr/kg (first harvest) and 1 birr/kg (second harvest) (Interview 38). Many farmers apparently miscalculated for the last two seasons expecting prices four to five times higher than the actual selling price (Interview 39). This miscalculation of price volatility matched with the higher input supply costs of tomatoes in comparison with onions renders it even more disconcerting that farmers continue to cultivate tomatoes instead of onions when onions sold for 7-8 Birr/kg at the Addis Market at the time (Interview 38).

In the next step in the value chain, the wholesalers Market in Meki, prices are still similar to the farm gate prices and the profit margin of the interviewed retailers and traders seems questionable (see Appendix 1 for the Table on Meki Market Research on August 31). At Addis Wholesale Market (see Appendix 1 for the Table on Addis Ababa Market Research on August 28) we encountered a different picture: Prices are more varied in general but can actually be matched to the presented farm-gate prices.

Buying prices range from 3.5 to 4.5 Birr/kg, the average price is 3.9 Birr/kg. Selling prices range from 4 to 7 Birr/kg, the average price is 5.2 Birr/kg. Consequently, the average profit margin is 1.3 Birr/kg (ranging from 0.5 Birr/kg to 2.5 Birr/kg). Noteworthy is that most wholesalers source their tomatoes from Meki/Ziway. Another observation is that wholesalers who receive the tomatoes directly from farmers offer the cheaper selling price (4 Birr) while the higher selling prices correspond to those retailers that buy from wholesalers and sell at 4.5-5.5 Birr/kg. The highest selling price, 7 Birr/kg could be

attributed to the tomatoes' selected quality, i.e. added value due to sorting process. Finally, contrasting the statements of farmers and brokers that prices were falling the wholesalers noted an increase in price during the last year. The overview of prices gained at the Piazza Vegetable Market in Addis roughly corresponds to the information (3.5-4 birr/kg as wholesale price) that some small-scale farmers in Meki have at their disposal (Interview 38). One farmer claims that if the Addis price is 8 Birr/kg (5 Birr/kg), then he sells at a farm gate price of 5 Birr/kg (3 Birr/kg) (Interview 40).

Yet, misinformation in the rural areas does exist as well, as is demonstrated by one statement citing 12-13 Birr/kg as Addis wholesale price (Interview 36). This latter figure corresponds better with the price information we gathered in two Addis Ababa supermarkets (August 27) where selling prices were equal to 13 Birr/kg (Shoa Supermarket) and 17 Birr/kg (Chicco Supermarket) respectively.

The following figure visualizes the price development for one kilogram of tomato along the Value Chain.

Figure 25: Tomato Price (per kg) along the Value Chain

Surprisingly, this linear analysis of price creation seems quite transparent and convincing at first glance, which gives reason to suspect that other factors influence the general perception of a failing value chain.

Nevertheless, comparing for instance the figures on producer prices gathered during the fieldwork to authorized figures provided by FAOSTAT (2015) on annual producer prices that range from 2.83 Birr/kg (2010) to 4.57 Birr/kg (2012) only demonstrates the reality of price volatility once again. Unless, one is rather inclined to doubt the reliability of the gathered data, which is indeed a valid concern given its limitations in terms of quantity and coherence as was remarked beforehand. Bearing in mind the indicated limited scope of our research and its validity, but in accordance with the findings of other sections of this report, we find that there is an overwhelming need for transparent market information and a functioning enabling environment. Only if this is achieved, trust in the market mechanism and responsible authorities can be developed.

4.3.4 Food Security

General observations

Food security is an important issue in Ethiopia due to severe famines in the past, it is a central theme of many stakeholders of the vegetable value chain. Still these stakeholders have different vulnerabilities to food insecurity and have often diverse viewpoints on causes and coping strategies.

The actors of the enabling environment, especially the government, need to lead the fresh vegetable sector towards a favorable development so that food security can be ensured. They are capable to invest in the expansion and diversification of vegetable production and to support marketing and processing (see chapter 4.1.4.1 on Agricultural Policy). Furthermore they are in charge to provide the necessary infrastructure for this sector. Regarding food security, the enabling environment is weak since the main strategy is to increase the national food production and to give trainings on production increase. According to the Ministry of Environment and Forest, food security is a key vulnerability in the Ethiopian Program of Action (Interview 32) and they see increased efficiency through technology as a way to enhance production and therewith the availability of food in the country.

Actors of the supporting markets such as LIVES (Interview 25), Solidaridad (Interview 17), and the Ethiopian Catholic NGO (Interview 43) mention food security as a problem in the region. They give trainings on agricultural techniques, marketing and some even on the right usage of food. However, when we asked local stakeholders about food security, especially with regard to the Rift Valley region, most of them answered the region was food secure. We asked several smallholder farmers in the Meki area if they experienced problems in food availability, for example due to droughts. They answered that there has been a drought a long time ago (1985, red.). Since then, there has been no drought, and enough food is available throughout the year (Interviews 40, 41). The region is said to be food secure nowadays because of the possibility of irrigation. Also the development agents we interviewed in Meki area (Interview 30) confirmed this. But even if those actors of the supporting markets and the enabling environment maintained that the Rift valley was food secure, it does not mean that smallholder farmers and their households really are.

Those smallholder farmers we talked to tend to produce all the food they consume, or at least produce a part of the food that they consume, and spend additional income on other

food products. Many farmers produced not only vegetables, but also staple crops and they have animals for dairy products and meat, which contributes to a nutritious diet (Interviews 1, 2, 3, 4, 5, 36, 41). One farmer even indicated that he could produce all the foods they need in their household and spend no additional income on food (interview 41). However, there are reasons to doubt whether some products are available the whole year through. Due to the growing amount of farmers, available land for agriculture is becoming scarce and there is increasing competition (Interview 30).

The fresh vegetable value chain has many weak points, when observed with respect to food security. Inputs, supporting markets and knowledge influence the availability of, the access to and usage of food significantly, which can be learnt from the following results.

Evaluation of the hypotheses

These hypotheses were generated during the study project and already introduced in 3.5.3. In the following part we want to present the results of the fieldwork and the evaluation of the hypotheses systematically.

1. Low yields are a cause of low food availability. A barrier to yields are limited access to inputs due to inaccessible input markets, as well as high input prices, lack of credit and savings, risk aversion and knowledge on the use of inputs

To get an idea on the problem of yields and inputs we talked to all actors directly. First of all, the farmers of the Ethiopian Rift Valley are able to produce relatively high yields concerning the vegetable production in Ethiopia, whereby the steadiness of those yields is strongly related to the possibility of irrigation (Interview 25). Due to these irrigation possibilities, stakeholders perceive the food availability as sufficient. However, much improvement in yield increases can still be made.

Access to inputs

The problem with the efficiency in production starts already with the access to important inputs. The inputs we regard in this research are technology, biochemicals, water, land, and labor.

Many farmers that were interviewed in the Meki area try to purchase inputs to increase their yields. Often sold products are improved seeds for vegetables, chemical fertilizers and pesticides (Interviews, 7, 8, 29, 39, 40, 41). Those inputs can be bought at private input supply shops in Meki, at the cooperative or the union, or from extension workers (DA's). Some farmers also tried to produce their own seeds, but failed because shops

mainly supply hybrid seeds, which are not reproducible (interview 27). The experts from the LIVES project are engaged in improving the input supply business and to make it more transparent and affordable:

”[...] *the majority of input service supplies are made by public so we are trying to engage privates and groups like youth group or women, to supply or just to engage in the process of marketing”*(interview 25).

The use of agricultural technology in Ethiopia is still low and we observed many farmers using mainly manpower for agricultural activities such as harvesting and planting. Some farmers also use oxen and sometimes a tractor (Interview 5, 36). According to the Ministry of Environment and Forest, food security can be improved by making land use as well as agriculture more efficient, through technological progress and efficiency measures (Interview 32).

Water is available in the rift valley because of an irrigation system with pumps and the water resources of the lakes (Interview 26) (see also chapter 4.1.1.6 on *Irrigation*). To use the irrigation system, the farmer has to be a member of the cooperative. Still many farmers feel vulnerable because of the lack of knowledge concerning the maintenance of the pumps and do not know how to react in case of water shortages (Interviews 3, 13, 27, 30). This suggests that the part of food availability in Meki area, Rift Valley Ethiopia, is very dependent on the availability of water resources, which come from the river, the lakes, as well as ground water aquifers. At the same time, due to overuse as well as changing rainfall patterns related to climate change, the availability of these water resources is diminishing over the years (Interviews 27, 30). Changing rainfall patterns and new appearing droughts pose an increasing risk on food production and the food availability in this region (see also chapter 4.3.2).

Another important input for the production and therefore the availability of food is the amount and quality of land. In Ethiopia farmers have no formal ownership of land, only user rights and are therefore not able to use land as collateral. Land tenure is also in other regards a problem among smallholder farmers (see chapter 4.1.4.3 on Land Tenure System). Some small-scale farmers (Interview 14) we interviewed wanted to increase their amount of land, but had no money to pay the rent. The access to land seems very much related to the network, the social status and the financial resources a farmer has. As already pointed out in the Gender-related results (see 4.3.1), female farmers face more barriers to accessing land and other inputs. Whereas small-scale farmers are struggling

for more land, one commercial farmer we interviewed received all his land from the state in 1994 to open the farm (Interview 28). For one semi-commercial farmer, it was possible to expand his land by clearing forest, apparently before it became forbidden (Interview 36).

Labor cannot be seen as a major limiting input, since many young men and women are waiting at the Meki labor market for jobs in the agricultural sector (Interview 1, 9, 33, 34).

Input prices

Many improved seeds, fertilizers and pesticides are imported from abroad (e.g. from Israel, China, India and Singapore), and have to be transported from Addis through different traders to the Rift Valley (Interviews, 7, 8, 24, 29). Therefore inputs are very expensive and not all products are available all the time. The barrier to get new seeds also causes that, especially small-scale farmers with a limited amount of land, are reluctant to try out new crops or new varieties of the crops they already grow (Interview 25).

Credit and savings

Vegetable production is a risky business, they say, because of the fluctuating prices from season to season. The vegetable market is unstable and prices are volatile. Moreover, due to the risky character of vegetable production, credit institutions often do not give credits for farmers engaged in the vegetable value chain (Interview 25). Some small-scale farmers interviewed never tried to get a credit, because they did not know how or never met a farmer who already got one (Interview 3, 38).

Risk aversion

Furthermore the lack of knowledge in growing new crops and the right use of pesticides and fertilizers make farmers tend to risk aversion, so to produce the "well-tried and proven" crops even if this leads to an overproduction and following to price collapses.

Knowledge

Input suppliers and governmental DA's try to tackle the lack of information and give trainings on the correct use of fertilizers and pesticides, but in case of new pests they often do not know how to correctly apply the agrochemicals (Interview 25). When new pests appear, farmers tend to increase the dose of pesticides, instead of using the right amount.

So one input supplier from Meki told us:

"I have noticed that the demand has gone up, while the dosage used each time is decreasing, because the efficiency of appliance is increasing" (Interview 7).

Also when pesticides become more effective per dose, farmers still buy more of those inputs, which suggest that they have limited knowledge about effective input use. Also, many farmers used seeds and pesticides provided by cooperatives but those were not always available. Some farmers would want to buy agro-chemicals, but cannot afford them (Interviews 7, 8, 29, 30).

Though stakeholders perceived food availability as sufficient, there are still challenges in increasing yields in the Rift Valley. Our findings above confirm the barriers to yields that are mentioned in the hypothesis. As we realized during the interviews and observations, yields are determined by the access of farmers to inputs such as land, water, seeds, fertilizers, pesticides and credits. If those inputs stay affordable for all farmers in the Rift Valley and if farmers are guided to use those inputs the right way, the availability of vegetables in the region can be stabilized.

2. Limited knowledge of value chain actors on market information and trade flows causes a mismatch of supply and demand, which affects availability and accessibility of food.

The lack of information on market prices and trade dynamics often leads to overproductions and price crises, which cause a loss of income for the farmers and extend the power of brokers (see also 4.3.2.2). If prices fall to minimum many farmers leave their crops to rot in the fields to save at least the costs for transportation (Interview 25). On the other hand, low prices for crops can lead to minimal production or even to the abandoning of certain crops, since farmers cannot break even anymore. Besides, the information on the right quantity and quality for the wholesale market does often not reach smallholder farmers. This can lead to the fact that some products are not available or not affordable for the consumer-side. In both ways, food security is in danger and right information is the key.

Many of the information on markets, demand and prices goes via the brokers. Farmers get the information on prices mainly from brokers, but also from neighboring farmers, cooperatives, DA's or with the help of mobile phones (Interview 2, 3, 38, 40, 41). The problem is that brokers often give false information on demand and prices, to keep a

bigger share for themselves (Interview 25). Brokers are equally important traders and information dealers as main beneficiaries of the not functioning information network (Interview 25).

Some Farmers, cooperatives as well as development agents try to avoid the use of brokers in the value chain, but they are too established and powerful which makes it difficult to succeed in this attempt (Interview 30, 41). On the other hand brokers are essential for the linkage of farmers and retailers/wholesalers, as one road-side seller claims:

"Without brokers we wouldn't have information on prices and connection to farmers" (Interview 5).

Experts of the LIVES project claim, that it is important to integrate brokers as official actors in the value chain. This means to capacitate and certify them (Interview 25).

DA's are another important source for information on markets, since they travel the country. They have a better reputation and are more trusted by the farmers (Interview 13, 14, 41). Governmental extension services in general give training to all farmers, but the trainings are according to LIVES mainly on production techniques (Interview 25). Current extension services lack focus on market-oriented knowledge, like processing and marketing skills. Most trainings are designed with the goal to increase food supply for the local demand and for own consumption. But the market situation in Ethiopia is developing and there is need for more market-oriented services (Interview 25).

Small-scale farmers mainly sell to the brokers if they are not able to bring their produce to the local market themselves (Interview 2, 3, 5, and 13). There is also the possibility to sell products via the cooperatives, but the problem is, that the cooperatives do not want to sell all produce (Interview 41). They only take high quality products and just from a few farmers. Since vegetables and very perishable goods, farmers are mainly "price takers" (Interview 2, 25). This means that they have no bargaining power and have to accept the prices and conditions dictated by brokers and cooperatives. The performance of cooperatives and Unions concerning the linkage of farmers to markets, is criticized strongly by small-scale farmers. Some farmers, who are members of the Meki Bathu Cooperative state that those provide sometimes useful inputs, but cannot help a lot with trade (Interview 2, 3, 25). Others do not join the cooperative because they feel the entrance fee is too high (Interview 41).

This hypothesis can be partly verified: Cooperatives and extensions services are not capable to establish a sufficient information flow between farmers and the market. Therefore, brokers are the necessary traders to secure the market access for the farmers. Unfortunately, they are corrupted and this construction mainly benefits the profits of the brokers. This has a big impact on the actors at the two ends of the value chain, farmers and consumers, and threatens their access to food and the availability of vegetables in the Rift Valley.

3. High food prices as well as high volatility of food prices negatively affects food accessibility for smallholders and consumers that buy fresh vegetables

Since changing production patterns and over-production are common in the region, volatile prices are the consequence. Furthermore, high food prices are also caused by very high input prices or the volatility of input prices (Interview 24). Those food price fluctuations are one of the biggest fears of farmers (Interviews 3, 5, 41). At the same time, high prices limit the economic access of consumers to fresh vegetables at the market and therefore cause food insecurity.

Governmental DA's know about the problem of price volatility as they comment:

" [...] *100-200 trucks with tomatoes a day: farmers only grow tomatoes, the prices are low, so next year the majority will grow something else, tomato prices will rise again"* (Interview 30).

They try to tackle the problem through the introduction of crop calendars. Furthermore they promote the diversification of crops and the possibility of processing (Interview 30). Farmers demand more governmental support and intervention concerning the problem of price volatility (Interviews 3, 41). Experts of the LIVES project ask for more business promotion, like processing businesses and admit that the responsibility to promote those lies within the government as well as NGOs and research institutions (Interview 25).

During the field-work we got a very good insight on the impact of food price volatility on the producer-side. Farmers seem to be dependent in their production on the dictate of prices. But often farmers are consumers as well and depend on additional purchases at the market, so that they are doubly affected by price fluctuations.

Although we observed high prices on the markets for certain vegetables that limit the access of consumers, more statements on the impacts of unstable prices on the consumer-

side cannot be made. So this hypothesis could not be completely clarified and further research on consumers who have not the possibility of additional food production - that is consumers without farmland - would be of great interest.

4. Smallholder farmers have limited knowledge about the use of food, which negatively affects food security.

Figure 265 Addis Ababa Vegetable Market

Even if enough food is available and the physical as well as economic access to food of the household is guaranteed, the household cannot yet be declared as food secure. The use of food to ensure a healthy nutrition is central to reach food security. Many actors of the supporting markets, like NGOs, are aware of the issue of food use and try to fight the knowledge gaps of farmers and consumers (Interviews 17, 43). Many farmers do not know about the right use of agrochemicals, which threatens the food security of all consumers of fresh vegetables and other crops. The catholic NGO and the NGO Solidaridad promote organic fertilizers, pesticides and composting (Interviews 17, 43) as well as certain input supplier try to give trainings on the right use of agrochemicals (Interviews 7, 8).

Also DA's claimed during the interview that many farmers do not know about the importance of right treatment and preparation of food, but that women are more interested in trainings on the use of food:

"*Women are rather interested in trainings about nutrition, cooking or fuel-saving stoves"* (Interview 30).

So women trainings of DA's and Health DA's on nutrition and farming techniques are essential to reach food security at the household level. In addition, DA's try to promote the use of gloves, masks and other equipment for farmers when they apply agrochemicals

(Interview 30). Solidaridad criticizes the government strongly, because they focus mainly on the increase of production and do not care about the promotion of healthy food treatment and consumption:

"*Most of the programs we do are about developing supply chains and increasing production and productivity as if you have more cash crops you have more money and buy food and if you have more food you have more to eat. The whole nutrition issue is not addressed.* (Interview 17)".

But trainings are not only needed for farmers. Also traders, such as brokers, or retailers and wholesalers often do not know how to transport, store or cool fresh vegetables appropriately, as we could observe during joint inspections of markets and fields.

The dimension of use is not yet included in the approach of the Ethiopian government and research institutes, therefore a lack of knowledge on this topic leads to a lack of food safety (Interview 25). Food use does not only relate to the handling of foods as often assumed, but also to non-food inputs, as water, soil and chemicals. Wrong use of chemicals can cause diseases on the producer- as well as the consumer-side. Finally, incomplete diets and careless treatment of foods can decrease the nutritional value of food, especially of fresh vegetables. During our interviews with farmers, input suppliers and researchers we could clearly verify this hypothesis, even though further research on causes and consequences needs to be undertaken.

5. A lack of quality standards, insecure land tenure and poor local infrastructure negatively affects food security.

Quality standards

The government of Ethiopia as well as NGO's are aware of the food safety problem in vegetable production. The Ministry of Environment and Forest claims to promote organic fertilizers and pesticides but the reality of farmers seems to be different. All farmers who are able to afford chemical fertilizers use them (Interviews 7, 8, 29). The lack of food ethics seems to be an issue in the country that is not fully addressed yet. Input suppliers as well as LIVES mention the danger of overdoses in pesticides and fertilizers. Experts go to the fields and advice farmers if possible, but there are no quality assurances or standards for vegetables for the local market in Ethiopia (Interviews 7, 8, 25, 29).

Also there are no known standards on how to handle and process food safely for local markets. We observed the way fresh vegetables were handled at the vegetable market in

Addis Ababa as well as in Meki. Traders, wholesalers and retailers did not take account of hygiene. This contrasts with vegetable production for export markets. For export, quality standards do exist, for example GlobalGap (Interview 42). According to the Meki Batu Union, products that are exported face regular controls on health and safety issues concerning the processes in the facility (Interview 23). Also the division of products show the difference in quality demand between local and export markets. At the onion processing market (Interview 22), one of the managers said that the leftovers, which are not suitable for export, are sold at local markets. Only onions that are free from fungus are allowed to be sold for export, but onions with fungus can still be sold at the local markets (Interview 22). Also in interviews with onion road side sellers and smallholder farmers, we found that farmer households keep the products with the lowest quality for home consumption (Interviews 5, 34, 35).

Land tenure

In Ethiopia, all land is owned by the government, and therefore there is no formal ownership of land by farmers. According to the DA's we spoke to, the government does not rent any more land out. Farmers have only the option to rent land from other farmers. When foreign investors want to rent land, the local government is involved and a compensation fee to farmers has to be agreed on. Farmers on the other hand can rent land to each other without government interference (Interview 30). It might differ from year to year to whom farmers rent their land and how large the rented out areas are. This suggests that there is no land security, and no accountability for characteristics of the land, such as soil quality. This increases the risk of overuse of the land and might negatively affect soil quality, as well as decrease incentives to invest in soil conservation.

Local infrastructure

In the area around Meki and Ziway, we observed a major road of good quality that connects the region to Addis. However, with increasing distance to cities the quality of the roads was decreasing (see also 4.1.2, *Infrastructure*). Only few roads were paved. Nevertheless lack of infrastructure was not mentioned as a problem in the interviews. Instead, the fact that farmers did not have a car was perceived as a problem. When farmers have no own transport facilities, this increases their dependency on brokers (Interview 43).

We can partly confirm our fifth hypothesis. Though we have little information on the local infrastructure, we observed a low land tenure security. Though there is recognition

of the importance of quality standards for food safety in vegetable production, there are no such systems for products sold at local markets - quality standards can only found for export products.

6. Low efficiency of supporting markets limits the dissemination of knowledge, which affects food availability through agricultural production and use of food through knowledge on food safety and nutrition.

A major critique on supporting markets in Ethiopia is that they are not efficient. This results in a lack of credit, a lack of knowledge dissemination and a lack of access to the right technologies. The main sources of inputs and information are input suppliers, DA's, and NGO's.

The inputs that are available are limited and often the right inputs are difficult to get, also prices of imported products are often high (Interview 29, 30). Some products are not a good match for the local situation, such as the tomato seeds from Israel that are bred to suit climatic conditions that are dryer than the climate in the Rift Valley.

Development Agents usually have general training and lack knowledge specific to vegetable production (Interviews 25, 17). Moreover, a lack of accountability of DA's is seen as one of the reasons why the Ethiopian extension system does not function properly.

"*If there's one DA and he's responsible for 2,000 people, I don't know if he's going out then to give the trainings - there is no incentive. He's paid by the government, but he does not have to report back to the government what trainings he gave or what he did the last month. That's part of a system which is very weak, that's why we also work with the private sector*" (Solidaridad, interview 17).

Farmers have no choice to whom to go, since there is usually only one FTC in the area. If they do not appreciate the services from DA's, there is no feedback into the system (Interview 25, 17).

Another point of critique on the extension system is the focus of the training that DA's provide to farmers. Trainings mainly focus on production increase, by means of improved seeds and inputs. They also use a cropping calendar. However, training on processing or marketing is missing (Interview 25, 30, 17). NGO's and research projects such as at IRLI try to fill this knowledge gap by training the local extension workers, also on topics such as nutrition. Also DA's themselves admit that they have a knowledge gap and state that

there is a discrepancy between the theory they learn during their education and the problems they face in reality. They try to fill this knowledge with putting more efforts in their work (Interview 30).

Experts at LIVES have a vision on how the efficiency of dissemination of technology and knowledge can be improved (Interview 25). It is especially the business approach that fails in Ethiopia at the moment. LIVES-experts criticize that farmers receive information and technology for free, which weakens any feedback that might come from farmers. Instead, LIVES-experts advise to work with business models. If farmers have to pay for equipment or technologies, they will be more motivated to use them, and they will be more careful than when they get them for free.

In the Meki area, the Catholic Secretariat NGO offers integrated programs with an emphasis on improving food security. For example, they advise on the consumption of a diversity of vegetables and they try to promote keeping livestock for consumption as well (Interview 43). They mention that there is no shortage of food, but rather a lack of knowledge of what to eat to be healthy.

According to Solidaridad, the communication between organizations in supporting markets and extension services could be improved. Often, they are working parallel instead of cooperating. Other organization might have really good solutions for problems, but important actors might not be aware of this. By increasing the communication between actors, the efficiency of the distribution of technology and knowledge can be improved.

The results above confirm our sixth hypothesis. The supporting markets are inefficient in providing knowledge. Knowledge provided by the public sector lacks a business approach and market-incentives. Furthermore, the linkages between research institutes and extension services, as well as the communication between different extension and knowledge providers are very weak.

5 Discussion

Based on our investigation conducted in Ethiopia, we discuss and further assess whether we achieved our objectives and to provide answers to our main research question *'What are the constraints and opportunities for developing the vegetable value chain in the Rift Valley in Ethiopia?'* as well as the concept-specific research questions:

- *How does climate change affect the value chain of fresh vegetables?*
- *How does vegetable production affect smallholder's income situation?*
- *How can development of the vegetable value chain contribute to food security?*
- *Which gender-related constraints exist in the vegetable value chain?*

Mapping the VC allowed us to, first of all, identify and analyze general problems and constraints on all levels of the VC as follows:

The entire vegetable value chain is shaped by inefficiencies on every level (compare section 4.2.5) increasing transaction costs, which can be attributed in part to the fact that solutions to encountered obstacles are often improvised and temporary in nature. The lacking multi-dimensional capabilities and capacities of stakeholders along the whole VC, e.g. regarding technology and knowledge, accumulates the inefficiencies mentioned before, causing not only losses in net profit but also for example the degradation of natural resources.

Moreover, the VC is characterized by an informal nature, i.e. transactions usually do not involve contracts or binding agreements, often due to the fact that there is a huge number of small transactions and thus, the opportunity costs of negotiation for agreements would not outweigh the costs of not having them. This creates insecurities for all stakeholders, especially for smallholders who we identified as the weakest link in the VC as they are affected mostly by any of the constraints observed. This statement disregards the position of daily laborers, because within our study they are regarded an input factor rather than a stakeholder. Despite of that, we want to stress here that they suffer perhaps even more from the reality of the informalities such as no binding working contracts as well as lacking social security. This informality is combined with the risky nature of the vegetable business that is prone to high investment costs confronting high price volatility.

According to the opinion of interviewed experts and often corroborated by our observations, the problems in the VC already start at production level:

As discussed in 4.2.4.2.1 farmers' production planning is based on information of poor quality or relevance, adjustments regarding for instance the harvest decision can greatly

impact the realized farm gate price. Also the applied production techniques that disregard required resource input are examples of possible improvements because their future viability remains questionable.

From the harvest onwards, food spoilage and the general lack of appreciation of food serve as another example of necessary improvement: Because (quality) sorting does not function, we observed high amounts of spoilage and losses on all levels. Here, quality standards need to be developed in order to allow better sorting among others.
Local overproduction or undersupply is entering a market situation that is marked by weak linkages, e.g. missing integration of local markets to regional markets; insufficient information transparency among others contributes to that. Consequently, overproduction-undersupply-cycles are a recurring phenomenon at the local level. This could be mitigated by the provision of information based on comprehensive market analyses and scientific research.

At present, however, brokers and middlemen perform a crucial task that grants them control over most transactions. This is owed to the discrepancies of the market structure in combination with a lack of information transparency that lead to the farmers' dependency on the brokers' services. In other words, information asymmetries are the reason for the brokers' high bargaining power. Nevertheless, at present brokers are needed, there is no alternative that could substitute their services linking producers and the market. Even semi-commercial farmers, who theoretically do carry enough weight, to push for their interests, in reality are still highly dependent on brokers' services. This is so because they too cannot enter the wholesale market without brokers as they face volume limits over time.

Yet, secured market access is a necessity for successful VC development, because farmers facing high investment costs in production, i.e. risk, need better marketing opportunities, increased security for instance based on contracts, or even pre-arranged market access. Consequently, to solve the problem of market access is pivotal to face the challenges of the Ethiopian vegetable VC. The question how to secure this market access is difficult to answer as farms can only market directly if their production volumes are appropriate. Here, the possibilities of an introduction of a radio market information system should be analyzed as a beneficial solution. For, without a radio market information system, the activities of the middlemen sector cannot change and farmers cannot bargain. But also this solution requires sound policy and implementation thereof.

Therefore, the major constraint, that we consider the root of all the presented problems, is the political environment of Ethiopia:

Ethiopian policy appears strong on theory as much with regards to gender empowerment as agricultural development targets or climate change mitigation, yet, weak implementation and follow-up regulations render these policies void.

First of all, the government fails to implement a legal control system that impedes corruption and fosters long-lasting partnerships by institutionalizing the as yet informal VC steps and stakeholders.

What is more, the interplay of government policies concerning land tenure and the extension system mutually aggravates their shortcomings. The land tenure system sets wrong incentives; instead of encouraging long-term investment in natural resources farmers are confronted with insecure land rights rendering them indifferent and unwilling to invest money and effort. In addition to that, the extension service does not foster farmers' capability to deal with their challenges. Instead Public extension services may be biased in line with the agenda of the government, and may have to support other government agendas. Then again, it is questionable how fruitful the government's effort to support small-scale farmers can be.

Our research produced ambivalent results regarding this issue, since some farmers appear consulting-resistant while others appreciate the support but the DA's services do not seem to satisfy their needs. Furthermore, water and especially soil related issues seem to not be considered by the government with the same priority as greenhouse gas reduction, this is mainly due to incentives by International Development Programs and remains questionable.

In the following, we proceed to match the concept-specific research questions with our research results.

- *How does climate change affect the value chain of fresh vegetables?*

As discussed in chapter 3.3.1, climate change effects are mainly due to the change in rainfall patterns. The challenges are aggravated by prevailing structural problems like outdated technology, maintenance and missing responsibilities for irrigation systems, rising (mis-)use of fertilizer and agro-chemicals to combat bad harvests as well as use of climatically inappropriate seeds. Furthermore, lack of waste management and sewage treatment lead to additional pressure on water bodies. Unregulated extraction of surface water for irrigation and uncontrolled drilling for ground water overexploits water

resources. Institutions are creating wrong incentives, water can be extracted for free, and the land tenure system discourages sustainable soil management. Government initiatives are focusing on greenhouse gas reduction, also fuelled by international development programs, instead of tackling problems concerning soil protection and water use efficiency that are needed more urgently.

Based on the issues identified during our field work, responsibilities regarding climate change mitigation strategies have been identified. The most important action to be taken is to change the handling of water resources.

In order to increase water use efficiency a shift from furrow irrigation to drip irrigation to increase water use efficiency should be promoted. Additional measures for sustainable development of water resources entail:

- Establishment of maintenance and education on maintenance systems for existing irrigation schemes
- Establishment of monitoring system for groundwater drilling and elimination of illegal drilling
- Definition and reinforcement of maximum extraction amounts according to recharge potential
- Promotion of water harvesting

Moreover, it is important to adapt the cropping system by introducing formerly uncommon crops and adapting crop cycles. It has been proven in several studies that organic farming practices enable to maintain soil productivity in the event of drought (FREYER et al. 2015). Impulses for soil erosion conservation should be created and soil protection measures should be implemented. Knowledge transfer with respect to education on efficient water, fertilizer and pesticide use is currently inadequate. Research by local universities is lacking and knowledge gaps have to be closed.

With respect to the enabling environment following key points have to be considered. Technical assistance for large scale irrigation schemes needs to be improved, irrigation unions need to be strengthened and adapted knowledge transfer with local and specialized trainers plays a crucial role. In order to reduce dependency and promote economic development job creation outside of agriculture needs to be approached.

- *How does vegetable production affect smallholder's income situation?*

The vegetable production is two-edged issue for smallholders (compare with section 3.4.3). One farmer compares vegetable production to a lottery which appears to be a fitting image: On the one hand it promises higher prices, i.e. returns, than other crops and can, therefore, contribute to the improvement of small-scale farmers' livelihoods. On the other hand, the market situation (prices) is very unreliable and farmers are vulnerable to other stakeholders' actions due to a lack of transparent market control. Moreover, the entry level to vegetable production is high (compare section 4.3.3): It requires high input supplies with regards to knowledge, capital and labor; which in turn raises the stakes. The high investment costs are then confronted not only with the market risk but also susceptible to natural risks such as water shortage and disasters. Climate change exacerbates these production risks. Small-scale farmers are less equipped to deal with these threats than other producers (semi-commercial, commercial) as much due to the scale of their production as their capital and technical realities. It remains, therefore, questionable whether the potential benefits are worth the risk.

- *How can development of the vegetable value chain contribute to food security?*

We did not do a full assessment of the food security in the region of our research, due to time constraints. Instead, we asked the different stakeholder in interviews how they thought about the food security in the region and how this is a problem. Therefore, we cannot give any conclusions on how food secure the region really is, the data we got is based on the perception of the stakeholder. To further contribute to food security in the rift valley, this should be assessed in the future. According to the different stakeholders of the value chain we interviewed, the Ziway-Meki area is food secure. Due to the possibilities for irrigation, the availability seems to be secured. However, climate change as well as overuse and contamination of water resources are threats for the future availability of food. Value chain development to foster food security should therefore focus on sustainable water use. At this moment, incentives for appropriate water use are lacking. The government could play a role in setting the right institutions in place for sustainable water use, however their priorities are set on climate mitigation strategies instead. Based on our observations and interviews, we doubt if there is a nutritious diet available throughout the year. Fresh vegetable production contributes highly to a nutritious diet, but the production is concentrated in the summer season, which leads to uneven availability. The diversification of crops at most smallholder farms fosters the

access to food, as well as access to a varied and nutritious diet. The most important constraint herein is the knowledge on what makes up a nutritious and healthy diet, both in respect to food diversity as well as to hygiene. This includes the use of biochemicals. Not only the knowledge at the household level could be improved, also awareness of the national government about food quality and food safety could contribute to food security in Ethiopia. While we found that smallholder farmers and laborers are the weakest link in the vegetable value chain, food security policies should focus on this group. The focus of extension service addresses mainly the increase of yield, but the bottlenecks for farmers to capture value in the marketing and trade part of the value chain remain largely unaddressed. More awareness and action of the government to tackle the food security problem in these sections is required.

- *Which gender-related constraints exist in the vegetable value chain?*

Ethiopia is still very shaped by strong traditional gender concepts that highly influence the role of women within the value chain of vegetables. Limited access to all resources, such as education, hinder women in filling high level positions within the value chain and force them into less responsible and poorly paid jobs compared to men. Since women in Ethiopia still do the major workload in agriculture and vegetable production the development of vegetable value chains is strongly dependent on the overall involvement of women. We saw that this is even more difficult to realize in view of the fact that not only the men-dominated society does not realize the relevance of women, but also the women and female farmers themselves underestimate their own importance for the production of vegetables. There are institutions in the Ethiopian society that are aware of the issue as well as a political will, but the success of implementation is still lacking. Especially regarding the value chain stakeholders' mindsets there is still a lot of time needed to overcome the constraints of gender concepts and sexism throughout the country that not only impede the development of vegetable value chains, but actually hinder the whole Ethiopian society's transition into a sustainable development.

6 Critical appraisal

As a group of young, white, middle-class students of the global North we were aware, that our presence and personal background would be highly influential on the interviews conducted. On top of the personal bias we carried into our field work the presence of our Ethiopian counterparts will also have influenced the responses of our interviewees as they represent a different part of Ethiopian society as most of the interviewees, especially the small-scale farmers, roadside sellers and daily laborers.

The way we approached the implementation of our study project, a just partly structured and open way, allowed us quite some flexibility as we were able to react more spontaneously to different problems we had to face. In some aspects a more detailed preparation would have helped us coping with certain situations in the field. Particularly training on field work in cross-cultural and cross-language research could have helped a lot in reducing biases concerning the work with the Ethiopian interviewees and students.

The core of our research, next to the literature research, were the semi-structured interviews we conducted. The interview-guidelines prepared by the German students in Berlin were based on our desk studies and literature reviews – but after discussing them with our Ethiopian counterparts (within the different topic groups) before and after the first visits to the field, massive changes had to be applied onto the questionnaire guidelines. The first approach of gathering as much information possible on all four topics (gender, climate change, food security and income generation) was dismissed after the first interviews in the field as we felt the time needed was too much to ask for from all participants. This is why we changed to a more topic based approach for the interviews. Participants of the study-project tried to acquire as much information as possible on their own core topic, and asked further questions on the other topics when time was available. Through this un-integrated approach a lot of information might have been lost, but against the backdrop of the time-constraints in the field we still feel that a sufficient amount and quality of data has been collected.

The interviews with the three different types of farmers gave us very important insights, but of course a broader time-frame (e.g. two or three extra field days) would have given us the chance to expand our knowledge on the life of the Ethiopian farmers significantly.

Crucial for the quality of the information we gained through the interviews, were the Ethiopian students who acted as “cultural-brokers” throughout the field-work phase and assisted by translating from English to Amharic or Afan Oromo and vice versa, as well as by adapting our guidelines to the cultural standards of Ethiopian society. As mentioned

in chapter 2.3 the skills of the interpreter are decisive for the outcome of an interview. Unfortunately the cooperation between Ethiopian and German students prior to the field work phase was insufficient mainly due to communication restraints. Our Ethiopian counterparts did not have the chance to participate in the long discussions we had in order to create the framework of our research and the guidelines for the questionnaires before the excursion, although we tried to integrate them via our online platform Wiggio. Thus it might have been hard for them to see the line of thought behind our questions, which again made it very difficult for us to explain our logical framework in the process of the interview. The difference in the curriculum systems between the Humboldt University and Haramaya University, we believe, was of disadvantage for the study project as whole. While German students had the opportunity to work and prepare on the topic for a whole semester, our Ethiopian counterparts did not have that opportunity. We think it would be of great advantage for future study projects to harmonize the curriculum activities of both universities prior to the field work phase. If in addition both student groups would connect and communicate via internet from an early stage on, transaction costs in the field could be reduced greatly and efficiency of the field work phase would increase remarkably.

As nobody of the German students was able to speak any of the Ethiopian languages we were not able to conduct interviews ourselves or trail the information from our interviewees. We could not be sure whether the Ethiopian students from the Haramaya University translated our questions into indirect questions and therefore implied certain desirable answers, but trust in our "cultural-brokers" with translating all aspects mentioned was a crucial part in this cross-cultural/-language study project. Although building trust can be a very complicated step, we felt that through our common scientific interest and the openness towards our different cultural backgrounds by all participants we managed to establish a good and trustful relationship within the group. Still it might have been useful if all of us had been trained on interview techniques and possible bias prior to the field work. During the fieldwork phase Ethio-German working teams improved from interview to interview – be it regarding the internal communication or post-interview evaluation in the evenings, which finally led to a more comfortable feeling for interviewees. In retrospect we believe that a one or two day team building seminar in Ethiopia with our Ethiopian colleagues would have been of great advantage to the project. In our opinion such a seminar could have been used to establish communication and working rules within the team which in consequence would have shortened the time to get used to each other and improved our working flow thereby reducing transaction costs

and possible biases. A point to critique is the very spontaneous un-notified selection of some interview partners - especially regarding the small-scale farmers. A more transparent and participatory way to select interview partners would have been desirable. The approach of problem-based learning made it difficult for us to feel appropriately prepared for our task, but in the end we were able to carry out a lot of interviews that enriched our research considerably. Nevertheless, we encountered some situations we could not have prepared for: working in such a big group was very challenging by itself but on top of that facilitating contact with local institutions was difficult. Some of our visits had to be arranged ad hoc and we had to consider ourselves lucky that for example the Catholic NGO was able to find a capable employee who held a spontaneous presentation for us. Also the selection of the institutions we spoke to was hardly representative for the Rift Valley – we interviewed the organizations which were the easiest for us to access, which then were usually those with strong ties to the Ethiopian government. We did aspire to get a holistic impression of the vegetable value chain and therefore we were not fully content by this uncritical approach. A possible solution would have been to contact suitable institutions in advance on our own.

Furthermore it only became clear towards the end of our field visit that we might have had to challenge the statements some stakeholders made a little bit more. We should have pushed us and some of our interviewees a little more towards an open-minded but still scrutinizing discussion. In conclusion, considering the limitations we had to face, we as a group functioned very well and the results of our research speak for the success of international study projects as ours.

Lessons learned

- **Harmonize curriculum structure of HU Berlin and Haramaya University (seminar structure, preparation, tasks etc.)**
- **Shared electronic exchange platform for students from both universities to share and exchange preliminary work (active engagement)**
- **Team building seminar for the whole student group in Ethiopia prior the field work phase**
- **Seminar on cross-cultural/-language research to sensitize students**
- **More engagement of German students in setting up appointments with organizations, institutions etc. in Ethiopia**

7 Conclusion

In Ethiopia, the production of fresh vegetables remains underdeveloped compared to other agricultural sectors. Low yields are attributed to the limited use of improved inputs and a lack of technologies. Vegetable production provides opportunities for increasing the income of farmers as well as enhancing food security. Value chain development could lead to an overall improvement in this situation. However, climate change poses serious threats to agricultural production and embedded gender roles in the society might hinder development.

The objectives of this research are to map and analyze the value chain of fresh vegetables in Ethiopia, to identify opportunities and constraints for value chain stakeholders and to contribute to a better understanding of the interlinkages between the fresh vegetable value chain and the dimensions of gender, climate change, income generation and food security in Ethiopia. We identified the constraints and opportunities for developing the vegetable value chain in the Rift Valley in Ethiopia, with a focus on smallholder farmers. In order to get these results, a literature research was conducted as well as an excursion to the research area around Ziway and Meki in the Central Rift Valley in Ethiopia. Data were collected using semi-structured interviews and discussion rounds with several stakeholders in the value chain. This included three different types of producers and middlemen, as well as actors and organizations in the enabling environment and supporting markets.

This research was organized in the context of a study project at the Humboldt University of Berlin. Twelve students from different master studies were involved, which contributed to the interdisciplinary character of the research. The project is based on the concept of problem-based learning, which means that the students involved had to take up responsibility to independently organize their own learning process. During the excursion in Ethiopia, the students collaborated with ten students from Haramaya University in Ethiopia.

Based on our results, we can say that the value chain of fresh vegetables is characterized by inefficiencies, improvised and temporary solutions and an informal nature. Transaction costs along the value chain are high and often no contracts or binding agreements are involved, which creates insecurities for all stakeholders. Smallholder farmers are affected most by this. The value chain faces local overproduction or

undersupply and due to weak market linkages, and insufficient transparency of market information causes a structural mismatch between demand and supply. Brokers make use of the existing information problem and gain control over most transactions within the value chain. The provision of information based on comprehensive market analysis could mitigate this problem.

Climate change poses risks on vegetable production. On the one hand, better education on soil protection is needed, while on the other hand current institutions fail to prevent water resources to be overused. Because food security in the region depends substantively on the possibilities of irrigation, sustainable water use in the future is crucial for value chain development. The promise of a higher income makes vegetable production attractive for farmers. A more transparent market and less price fluctuation would make the vegetable business more stable, helping farmers to make the necessary investments as well as to cope with the consequences of climate change. More attention to education on food safety and nutrition could improve the food security of smallholder farmers. Improving the position of women would also further contribute to the development of the vegetable value chain, because though they are responsible for an important share of the work, they face major constraints such as limited access to inputs and education.

We consider the political environment to be at the root of the structural inefficiencies in the value chain. The government fails to implement a legal control system that impedes corruption and fosters long-lasting partnerships. Moreover, the land tenure system sets wrong incentives, while the extension system does not enhance farmers' capability to deal with their challenges.

We strongly recommend further research regarding the following aspects:

- possibilities to reduce transaction costs;
- the role of cooperatives and necessary changes to increase their effectivity;
- support of market integration;
- market structure and ways to deal with price volatility;
- opportunities of income diversification and its impact on farmers' livelihoods;
- local level implementation of climate change mitigation & adaptation strategies;
- ways to foster women empowerment and education;
- to realize a comprehensive food security assessment according to state of the art.

Regarding the climate change- and gender-specific issues, research findings as well as existing political programs have to be customized according to the target groups' realities in order to have an impact and surpass theory.

This study project gave us a unique learning opportunity within the university context. We had the chance to do field work in a developing country, under qualified supervision and in collaboration with local students. The free learning method challenged us to take up own responsibilities during the whole research process.

The study group did face some difficulties during the project. For example, the group size made it difficult to organize ourselves. Moreover, the problem-based learning approach could not ensure that we had the best preparation of the data collection. During the excursion, we had to decrease the amount of interview questions due to time constraints. Better involvement of the students from Haramaya University could have improved the interview questions as well as the interpretation during our field work. Moreover, better advance training in interview techniques would have increased the quality of the data collection. At our research area, the study group found out that is was difficult to reach certain stakeholders and to organize the interviews. Therefore, some relevant stakeholder might have been missed, such as collectors, consumers and transporters.

Despite these challenges, though, the study project provided us a very educational experience. We see problem-based learning as a very enlightening and progressive method to learn due to the intensive personal involvement that we had in every step of the research process. This real-life experience provides more insights than theoretical learning methods and we believe we learned much more than we could have learned in any lecture hall.

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9 Appendices

Appendix 1 Market Research

The spreadsheets which contain the data that was collected during the market research in Addis Ababa, Meki and two supermarkets in Addis Ababa are to be found at a cloud storage location by following the Hyperlink stated below:

https://docs.google.com/spreadsheets/d/1ElxZBwkfZcNZND7GsCXH4Oz5xA8zQMxIbYCU1CzJd_o/edit?usp=sharing

We decided not to include the spreadsheets into the Appendix directly as the dimensions of the files would have made formatting into a readable size very difficult.

Appendix 2 Questionnaire

1. Questions – Farmers

(1) Where do you grow vegetables? What type of vegetables do you grow?

(2) How much land do you cultivate? How much of that land do you cultivate for your own use? (Subsistent farming)

(3) To WHOM do you sell your products, WHERE, WHY and at which PRICE? How do you know what the actual price is?

(4) How do you exchange information with other farmers? Are you a member of a cooperative?

If member of an irrigation cooperative:

(5) Does the fact of being a member of a coop affect your income and how?

(6) What are other benefits of being a member?

Climate Change:

(7) Which changes in precipitation patterns have you observed?

(8) Have you experienced water stress or extreme weather events like floods or droughts in recent years? If yes, what did you do? Have you done anything specific in the last months/year to adapt to water stress?
(9) Who are the people you turn to for help when facing problems on your farm?
(10)What do you regard as the main challenge in the next year for farmers like you?

Income Generation

(11)How important is the horticultural production for you in terms of income? Do you have other sources of income and if yes, what kind of sources?

Small-scale farmers:

(12)Do you consider your income as stable? How do you feel about your financial security and possible risks that you are facing?

Large-scale producers:

(13)Who is working for you and how do they benefit from it?

Small investors:

(14)Can you describe us your capital structure?

Food Security:

(15)Have you been threatened by hunger? (When/why/how did you manage?)
(16)How do you see the performance of the Ethiopian government regarding food security?
(17)How does the cultivation of the vegetable work from the beginning to the sale of the crop? (Where do you get the seeds from? Cooperation? Market?)
(18)Have you ever participated in an agricultural training? (If yes, when? how many days? What topics? Who organized it?)

Gender

(19)Where do you see the biggest constraints in your work?
(20)Did you go to school? How many years did you go to school?
(21)How does your daily routine look like? Workload (how many hours per day?)
(22)Who owns the land you grow vegetables on?

(23)Who is in power of decisions for investments and how the money will be spend?

(24)Do you have children? Are they going to school? Do they support you with your work?

2. Questions – Value Chain Stakeholders

Income Generation:

(1) What do you consider the main risks and chances being involved of your job?
(2) Who are your trading partners? Can you describe the trading process?
(3) What kind of vegetables are you trading? At what price do you buy/sell those products? Can you explain which factors determine the price?
(4) Which vegetable do you consider the most profitable one?
(5) Do you have other sources of income (besides trading with vegetable)?

Climate Change:

(6) When are your buying/selling prices highest/lowest?
(7) What are the reasons for farmers giving up on farming in your area?

Gender:

(8) Did you go to school? How many years did you go to school?
(9) Are your trading partners mainly men or women?
(10)How did you become retailer or trader? What did you do before?
(11)What is your monthly income? (compared with farmer incomes)
(12)What did your parents do? What did they expect you to do?
(13)How is the proportion of women and men in your field of work?

3. Questions – Cooperatives

General questions

(1) What are the members´ benefits of the cooperative(s)?
(2) How many members does the cooperative have? Who are the members?
(3) What do you see as the most important challenges for horticulture production?
(4) How is the cooperative organized? Since when do you operate?

Climate Change

(5) Where do you observe water shortage? What are important challenges with regard to water availability?

(6) What programs have you developed to help your members?

(7) (How) Can irrigation cooperatives combat climate change?

Gender

(8) How many men/ women are member of the cooperative?

(9) Which function/position within the cooperative do male and female members usually have?

(10) How are decisions made and who takes part in the process?

Income Generation

(11) How does the fact of being a member of the cooperative effect the income of farmers?

Food Security

(12) How does the cooperative try to improve the food security of members? How do you fight food insecurity?

(13) What does the cooperative to improve access markets and to inputs for farmers, such as seeds, fertilizers, pesticides, but also credit?

4. Questions – Governmental Institutions

Climate Change:

(1) What does the government do to improve water use efficiency and supply in Ethiopia?

(2) What are the most urgent environmental impacts of agriculture in the Rift Valley?

(3) How do you interact with farmers (in affected areas and elsewhere)?

(4) What are common soil and water protective measures?

(5) What mitigation strategies do you use to combat the effects of unreliable water?

Income Generation:

(5) What do you consider the main challenges and opportunities for small-scale farmers in terms of income generation?

(6) How do you evaluate the income generation potential of horticulture?

(7) What are results and lessons learned from the implemented previous programs? What are your next steps? (e.g. ADLI/ FYGTP program)

(8) How do you plan to increase the average income in the horticultural sector?

(9) How do extension services target the topic of income generation?

Food Security:

(10) What is the current situation regarding Food Security in Ethiopia? How do you see Ethiopia's performance implementing the Right to Food?

(11) What is your approach on improving the food security of small-scale farmers?

(12) Do you see essential flaws in the VC of fresh vegetables in Ethiopia, which potentially lead to food insecurity?

(13) How do you cooperate with farmers/ NGOs/ Research Institutes?

5. Questions – Governmental and Nongovernmental Organizations

(1) What are the main topics that you are working on in Ethiopia? In which regions?

Climate Change

(2) What are the main problems for smallholder farmers caused by climate change in Ethiopia/Rift Valley?

(3) Which are the specific problems in the horticultural sector?

(4) What water related projects are there in Ethiopia/Rift Valley?

(5) How can soil protection be improved in a climate like the Rift Valley's?

(6) What technology does your organization promote to improve water use efficiency?

Gender

(7) Which vegetables are mostly grown by women or female-headed households?

(8) In which parts of the value chain do women mostly participate?

(9) What are the challenges and opportunities of women's participation in the horticultural value chain?
(10) How do you assess the current situation of the distribution of power among men and women and the role of the women in rural households?
(11) Do you have gender projects? Do you offer special support for women?

Income Generation

(12) What do you consider the main challenges and opportunities for small-scale farmers in terms of income generation?
(13) How do you evaluate the income generation potential of horticulture?
(14) What role does the topic of income generation play in your organization?
(15) How do extension services influence income generation?

Food Security

(16) What is the current situation regarding Food Security in Ethiopia?
(17) How do you see the government´s performance regarding food security?
(18) What is the most pressing issue in order to improve food security in Ethiopia?
(19) How do rural households cope with food insecurity in Ethiopia?
(20) How can horticultural production contribute to food security in Ethiopia?
(21) (How) do you support small scale farmers in becoming food secure? (If yes, what are your concrete actions?)
(22) What are the differences concerning Food Security between rural areas/small settlements/urban areas? (If yes, what is the reason? How could this be overcome?)

6. Questions – Research Institutes

General questions

(1) What is the main focus of your research?
(2) Who are you main project partners?

Climate Change

(3) What types of plants and seeds are best suited for dryer climate, drought resistant?
(4) What consequences of climate change have you observed with regard to horticulture?
(5) In which areas are there problems with droughts, water shortage and weather extremes?

Income Generation

(6) How do you evaluate the income generation potential of horticultural production in Ethiopia (of small-scale farmers)?
(7) What do you consider the main challenges and opportunities for small-scale farmers being involved in horticultural production/horticultural value chains?
(8) Extension services are supposed to increase production and household income. Do you consider the actual extension services to be successful in increasing farmer's income? If not, can you explain why? Are there constraints, which hinder successful extension services?
(9) Can you describe the role of agricultural cooperatives in the context of income generation and income security of small-scale farmers?
(10) What influence do patent seeds have on the horticultural sector? Do they have an impact on farmer's income?

Food Security

(11) Which role does small-scale horticulture play for improving food security in Ethiopia?
(12) What inputs do farmers commonly use (such as fertilizers, improved seeds and pesticides)?
(13) How can farmers improve their land management to improve food security?

7. Questions – Extension Services

General questions

(1) What kind of training do you give to farmers?
(2) How often do you (extension workers) visit farmers?
(3) What role does horticulture play in the training program?
(4) Do you have a demonstration site? What are the activities on this site?
(5) Which equipment and training material do you have? (Is it adapted to illiterate people)?

Climate Change

(6) Do climatic changes cause problems in crop production? What and where?
(7) How can farmers improve/adapt to these problems?
(8) What are your main suggestions for the farmers when rain becomes less reliable?
(9) What technologies are there available concerning the improvement of water usage?
(10) What are the biggest challenges you face when training farmers?
(11) To what extent do the farmers adapt your training afterwards?

(12)What part of your training is most difficult to adapt for farmers?

Food Security

(13)What do you see as the biggest challenges in improving food security?
(14)What have been improvements in horticultural production? What was the role of training in these improvements?
(15)How can the training program be improved?

Gender:

(16)By which criteria do you choose the farmers you work with?
(17)Is there any extension service provided to women farmers only?
(18)Do women have equal access to training? How many women are involved in your programs?
(19) What supports are given to women who are participating in the horticultural sector?
(20)Are female extension workers involved in your programs?
(21)Do the husbands who get a training share the information that they obtained to their wives efficiently?

Income Generation:

(22)Where do you see the most significant lack of knowledge and skills at district level that hampers income generation?
(23)Do the extension services integrate the role of income generation, if so, how?
(24)To whom are you offering the services? Who pays for it?
(25)Who can become an extension worker?
(26)Do you support farmers in the attempt to diversify their income sources?
(27)Do the farmers accept the program? Do they make use of the extension services?
(28)How do facilitate access to knowledge source on district level?
(29)Which innovative ways do you use to build skills?

8. Questions – Microfinance Institutions

Gender:

(1) Who gets credits?

(2) Who asks for credits?

(3) By which criteria do you give credits? Securities?

(4) Do you have special funds for women?

Appendix 3 Interviews

Interview 1

09-04-15

Small-scale Farmer

Outskirts of Ziway

Age: 26

He has 3 years of experience working self employed small scale farmer. He is married and supports a family of ten, but as the single income. He is producing cabbage, onion & tomato on 4 hectares of land.

How do you irrigate your land and how much do you pay for it?

I irrigate using water from the lake, which I obtain using my own motorized pump. I only purchase petroleum for the machine.

How did you obtain the land you're producing on?

I have a contract agreement with a farmer until the harvest is over.

How much do you pay for it? And do you pay beforehand?

I pay 10,000 Birr per year for the 4 hectares which I give to the farmer before the production starts.

How many people do you employ permanently and temporarily? What gender are they?

I employ two male workers permanently and up to 7 women temporarily. Currently there are 7 people working on this field.

Where do you find your employees?

I gather them from around the neighborhood or if there is no one available also from the Ziway labor market.

What do you pay them and what are they currently doing?

Currently they are planting onions, for which they get 1,5 Birr per row planted. (Roughly 30-50 Birr per day).

What kind of education do you have?

I left after the 8th grade.

Where do you obtain your pest control chemicals?

From a shop in Ziway.

Observations:

The farmer apparently was good friend with the broker, who we met in the adjacent roadside sale. The irrigation system seemed to be well maintained and the water level was well adjusted. The farmer mentioned share cropping as a common system in the area, unfortunately it was not obvious if he is a part of it.

Interview 2

09-01-15

4 different Small-scale Farmers

Outskirts of Meki next North Korean Irrigation pump house.

How much land do you cultivate?

F1: 0,5ha

F2: 0,5 ha

F3: 4 ha

F4: 2ha

What's the share of irrigated land?

F1: completely rainfed (0 %)

F2: 0,25ha (50%)

F3: 1 ha (25%)

F4: 1 ha (50%)

How big are your households?

F1: 3 people

F2: 4 people

F3: 7 people

F4: 8 people

What kind of crops do you cultivate?

F3 speaking for all: onion, tomato, green bean, potato, cabbage and cereals such as maize, teff, wheat and sorghum.

Do you own livestock, if so what kind?

F1: cattle and goat

F2: cattle

F3: cattle, goat, sheep, mule, donkey

F4: cattle, goat, sheep, mule, donkey

Who do you sell to?

F3 speaking for all: We sell directly to wholesalers, the connection to the wholesaler is established by brokers. We also receive information about prices and demand from the brokers.

Can you negotiate these prices?

F3 speaking for all: As most of our crops are perishable we have no option other than to accept the prices the wholesaler offers us. We are price takers, because we must sell immediately after harvest. One exception is pepper, which can be stored and dried.

What's the share of produce you keep for yourselves?

F3 speaking for all: There is no fixed percentage, we keep what we need.

What kind of other sources of information do you use other than brokers?

F3 speaking for all: Among us farmers we share and distribute information via telephone or face to face. But the only outside information comes from brokers.

If you member of a cooperative?

F3 speaking for all: Yes we are members of the Meki-Batu irrigation cooperative.

What benefits do you have from being in this cooperative?

F3 speaking for all: It supplies us with inputs such as: improved seeds which is produced by the cooperative itself, fertilizers and different chemicals, but also with training in how to use resources efficiently. The training are not for all farmers of this area but for representatives of the farmers.

What do you learn in these training?

F3 speaking for all: We learn how to produce twice a year and we have training resource usage like water.

Is there anything you would wish the cooperative would help you with?

F3 speaking for all: Yes, if there is overproduction like we have at the moment with tomatoes. The cooperative does not help.

What is current problem with tomatoes?

F3 speaking for all: The tomatoes and sometimes also onion are rotting on the fields. The cooperative is weak when it comes to linking us to additional markets.

What is your perception of the union in general?

F3 speaking for all: When the cooperative started we all had high hopes about market access, appropriate market information, storage options and financial support, etc. We all think that the idea of a cooperative sounds really good in theory, but the cooperative is not helping as hoped. Once there was packing house for soybeans where grading has been done for exporting to the Netherlands but it is closed down now. This means an income loss for us farmers. Further there was credits were given from the cooperative to the farmers, but now this has stopped and credits are coming from private investors who demand interest on their loans which reduces our income. Still, because there are some benefits nobody has left the cooperative.

What other sources of income do you have?

F3 speaking for all: All our earnings come from farmer, from vegetable and livestock sale as well as cereal production. All of our surplus is reinvested into the farm and used for the education of our children.

Is there an opportunity of saving money for the future?

F3 speaking for all: government founded the Oromia Credit & Saving Association and is encouraging us to save money. On average farmers are saving 1000 Birr per year.

Climate change:

What challenges are you facing in farming?

F3 speaking for all: Due to the very late rain we are already experiencing problems. We have already big losses in the maize production. The rain only recently started, but if the scarcity remains even the irrigation system will not save us, because the pumps will start pumping mud to the fields.

In 2003 we already experienced a shortage of rain like this.

Who do you turn to for help?

F3 speaking for all: We expect help from the government when there are severe problems like in the famine of 1984.

Who is responsible for the maintenance of the irrigation system?

F3 speaking for all: No one is responsible, there are no experts in the area.

How much do you pay for the irrigation service?

F3 speaking for all: We pay 1000 Birr for every quarter of a hectare per harvest. This sum covers the electricity used for the pumps.

What CC mitigation strategies are you using?

F3 speaking for all: With the help of the regional government we diversify our product range to limit risk exposure. For example we also grow cereals which are not as susceptible to rain as horticultural products. We also try to save what we can in good times. We are using ground water, which can easily be brought up.

Further is needed for example more efficient seeds for harvesting 3 times a year, but especially poor people cannot access them and therefore have no change to mitigate effects of cc.

Have experienced new pests?

F3 speaking for all: Just last year we have found a new pest on our tomato plants. Further Locust is a great problem on cereals during September especially on wheat. The government is helping by spraying ULV chemicals via Airplane.

What other challenges are you facing and have you considered changing your profession?

F3 speaking for all: None of us has changed his profession. On the contrary people are still moving here because of the irrigation system. So far between droughts there has always been a gap 8 to ten years. We are currently looking for additional power supplies to keep the pumps running more continuously.

We need more information and technical trainings instead of just donations in order to help ourselves. Our hopes are for the government to put an emphasis on this area.

Observations:

We asked all four together involuntarily. The one with most land and livestock seemed to be respected by all others and naturally answered most of our questions. If asked separately the answers would probably have been more differentiated.

Concerning credits there is a government campaign to develop a saving culture. The farmers clearly stated that the saving is not well developed and needs further government intervention in the form of clearly stated regulations.

The farmers rely on false information, e.g. they believe the television weather forecast for three entire months. No professional information is distributed. Farmers are still expecting the North Koreans, who built to the irrigation system in 1985, to come back and repair it.

The farmers fear a future famine, it has been mentioned several times.

Their hopes rely heavily on government involvement. In this context it is questionable if past support from NGOs is falsely interpreted as government support.

Interestingly although all of the farmers extremely rely on the irrigation system, there is a complete lack of even basic maintenance such as clearing the water intake of pumps from water plants which does not require any technical know-how. At the time of the

interview only 3 of 9 pumps are still working properly, and the apparent condition of the three remaining pumps was very poor, so to our understanding it is just a matter of time until those pumps will break down as well.

What is needed most in this area is technical support and engineering solutions.

After finalizing the interview the farmers directly approached us and urged us with the following words: “Please don’t leave this problems, we gave you so much information, please tell the responsible authorities that we need help”.

Interview 3

09-01-15

Small-scale Farmer

Outskirts of Ziway next North Korean Irrigation pump house.

Mr. Baja

Age: unknown (around 40)

He owns 0,75 ha of land, that he cultivates with mainly vegetables such as tomato, onion, cabbage and sometimes fruits. He produces all of the products with the help of irrigation. He has four children with his wife for who he provides the only income.

For how long do you do you use irrigation on your land?

For 3 years I am using the irrigation system to cultivate my crops.

Are you a member of the Batu Irrigation Cooperation situated in Meki?

Yes I am a member.

How much does the irrigation scheme cost you?

I pay 3,000 Birr for my land for each time I harvest my crops which is about 2 to 3 times a year. For me this seems like a reasonable amount.

Who do you sell your products to? Can you explain how your product reaches the market?

I sell directly to a wholesaler, to whom I get in contact with via the service of a broker. The broker comes to me and establishes the linkage to the market for me, and also informs me about the current prices in the market.

How does the transportation work?

The wholesaler comes to my farm with a transporter and picks up the produce to sell it on the market.

How do you interchange information with the broker about prices and the like?

I speak to him personally or we speak via telephone.

How much do you get for your tomatoes?

I currently I receive 3-4 Birr per kg of tomatoes, but the prices are highly fluctuating. Sometimes they peak at 8 Birr per kg but they can also drop down to 1 Birr per kg.

Questions about Climate Change:

Do you experience any uncommon weather events?

This year I experienced a shortage of rain, or better put, rain started very late compared to recent years, which makes it difficult to survive for all living things. If the rain does not continue to be sufficient it will cause drastic problems as the irrigation we use is also heavily dependent on rainfall. 2015 is a year of water stress.

What's your general opinion about irrigation?

I wish to use irrigation as much as possible, but because the pumps only work partially we have to divide the irrigation time among the various users. We use it one after another, divided evenly.

What is your opinion about the Batu Irrigation Union?

The union only gives us technical training in farming techniques and distributes market information. But the union can do nothing against the direct water problems we face. We need more assistance from the government.

What do you see as the main challenge for small scale farmers such as yourself?

If water stress continues like this I am afraid that we might face a famine because failed harvests.

Have ever considered earning your living differently?

I have never thought of leaving this place, I would never move my family to the city because of the conditions prevailing there. In contrast, many people are migrating here to take advantage of the irrigation scheme. Farmers who rely on rainfed crops only harvest once a year, while I can harvest up to three times.

Mitigation strategies for climate change:

Who do you turn to when facing problems?

I have nobody to ask for help.

Are you using any mitigation strategies?

I increase the size of my land to produce more. Further I try to save money for the coming year. I also purchase pesticides to control pests.

Have you observed changes in pests on your fields?

In recent years the pests have increased. Tomato has the biggest pest problem of all crops. The additional pesticides cut into my budget.

Gender:

What role does your wife play in your production process?

She takes care of our kids and looks after our goats and sheep.

Observations:

Irrigation house and enclosed facilities need urgent maintenance in order to guarantee future functioning. Pumps are in poor condition, water intake is heavily grown over with water plants. Farmers do not seem to know who is responsible for taking care of the pumps, and are even expecting North Korean technicians to come back and repair machinery. Clear responsibility is lacking. Simplest technical assistance is urgently needed. In our perception farmers with access to irrigation schemes do not face the consequences of water stress as farmers without access.

Interview 4

09-05-15

Potato road-seller/small scale farmer

Outskirts of Shashamene

Female, Age: unknown, around 58

She has always been a farmer, lives with her husband, has 7 children, 3 daughters are married and don't live in the household anymore. Next to selling at the roadside they cultivate 0,5 ha. They are producing maize, sorghum and finger millet, additionally they own poultry.

Where do you get your product from?

I buy it directly from wholesalers who get it from other farmers around here or I produce it myself. This year because of the shortage of rain my maize harvest is failing therefore I am only selling potatoes.

How do you transport it here?

We pay someone to bring it here with a horse lorry.

What's the price of your product?

I sell potatoes by bag and not by kilogram. One bag is around 7 kilo and I sell it for 30 Birr.

How much do you pay when you buy the product?

I pay 300 Birr per Junta (100 kg), I usually sell it for 350 Birr to the local consumers and people passing by.

For how long have you been selling here?

I have been doing this for twenty years or more.

How well is your business doing?

Depending on whether there is a holiday or not I can earn up to 300 Birr per day or nothing at all.

What do you perceive as the main challenges?

From time to time the demand is not sufficient. I also fear the shortage of rain. We can't sustain ourselves just by potato selling like we are currently forced to. The thing is that we don't have any options.

Have you experienced weather like this before?

Yes, we've experienced this before, eight years ago. The government distributed maize, 3 kilo per person.

Have you ever considered irrigation?

Irrigation is not possible around here, there is only a shallow lake nearby which is not suitable to use for irrigation.

What are your children doing?

My three daughters are already married and my three sons are still at home and help working on the farm.

Are you a member of a cooperative?

No, there is none.

Observations:

The daughters seemed to have chosen their husbands themselves, married quite early and already had children. The daughters lived close by. This farmers don't keep track of time like western societies do, she didn't know her age neither how long she had been engaged in farming. This family owns several roadside sales. Due to the lack of irrigation possibilities this area seems to be more food-insecure compared to the northern Rift Valley areas. Vegetable production is not feasible.

Interview 5

09-04-15

Road-seller "Allawokil Cooperation"

Outskirts of Ziway

Female, age: 30

She has 7 years of experience. She is married with 6 own and 3 other children, who are orphans. The shop sells tomatoes and onions. They have an adjacent farm with rainfed crops and livestock.

What kind of cooperative do you advertise? (roadsign outside the shop)

The cooperative is for family members only.

Where do you get the products you are selling from?

We get them through different brokers.

What are the buying and selling prices of your vegetables?

We purchase the onion for 11 and sell them for 12 Birr each kilo.

How many people are you employing and how much do you pay them?

Currently we are employing two temporary workers for sorting out onions. They receive 50 Birr per day. Depending on the volume of product we hire more or less.

Where do you get your workers from?

Usually from around here, otherwise from the labor market.

Do you have a license for selling at the road?

No, we don't at the moment. My husband is trying to obtain one.

How big is your farm and what kind of livestock do you keep?

We have ox and cow, sheep and donkeys. We grow maize and wheat on about 1 ha.

How much product do you usually sell?

We sell about 5,000 kilo per week during holidays and the same amount in two weeks when there are no holidays.

How do you get the product from the farmer to your shop?

I pay other people for the transport.

What kind of school education does your family have?

I come from a family of farmers and didn't go to school before my marriage and now I have to take care of my children. My husband left after third grade, four of my children go to school and the rest is too young.

What do you regard as the main challenges for the business?

Onions suffer from extreme temperatures, too high and too low. Prices fluctuate between 3 and 15 per kilo.

What's your opinion on brokers?

Without brokers we wouldn't have information on prices and connection to farmers

Observations:

Though called cooperation this was a family business and not a cooperation of several member farmers. Extra income is put into care of orphans.

Interview 6

09-04-15

Broker

Outskirts of Ziway

Age: 30

Since 8 years he collects goods from farmers and establishes connections between farmers and wholesalers. He is living together with his wife and three children who all depend on his income.

How did you become a broker?

I'm a son of a farmer and got my contacts from past experience and exchanges.

With how many farmers are you in contact?

I work with 30-40 farmers per day.

How much money do you get for your services?

I get a commission per kilogram which amounts to arount 20 Birr per 100 kilogram.

How does the brokering service work?

When the farmer and the wholesaler are linked up the wholesaler makes a small upfront payment through me to the farmer. The rest of the agreed upon amount is paid when the product is delivered.

What quantities are we talking about?

Two entire truckloads are changing the owner through my hands in between 1 week and twelve days. I truck I earn 1,200 Birr.

Are you happy with your current situation?

For the moment I am content with the situation, I want to continue with my job as a broker. I know from experience that brokers make more than farmers.

Do you experience a lot of competition?

I am in an agreement with other brokers. We share information between each other.

Do you know any female brokers?

Women are not apt for this kind of work. It is too hard, too much running and you need to be very talkative.

How many female farmers are you in contact with?

There are six female headed farms I work with. Of the others many farms are run by married couples.

Apart from connecting farmers, what else do you do in your job?

I only establish the connections. Other brokers take care of transportation and the like.

Observations:

Unfortunately we could not find out why the broker was present at the roadside shop. The owner of the shop was not available for an interview.

Interview 7

09-03-15

Input Supplier

Meki

Age: 29

He employs one relative as a shopkeeper when he is not in town. He opened the shop five months ago.

Why did you open your own business? What did you do before?

Because I wanted to be independent and self-employed. Before I was an Agronomist Expert in Aparosh Agroindustry Enterprise, which is active in fruit and vegetable production.

What kind of products do you offer?

Insecticides, Pesticides, fungicides, herbicides, seeds and fertilizers.

What are your main customers?

Small scale farmers from around the area and semi-commercial farmers. I own a license, as a licensed seller I am able to sell directly to the farmers.

How do you decide which product to apply to a certain pest?

I offer the customer to visit him in the fields and directly inspect the affected plants. For this I do not charge any extra. Further I also teach farmers how to apply the chemicals correctly, which happens in collaboration with the local authorities. They also supplied me with brochures and guidelines (he shows several professionally made handbooks to us he keeps under the desk).

What is your most sold product?

I sell a lot of fungicides for tomato plants.

Have seen changes in the market since you started your business?

I have noticed that the demand has gone up, while the dosage used each time is decreasing because the efficiency of appliance is increasing.

How did you start your business?

Before opening my store I have already distributed chemicals for the company I have worked before. Also I conducted market research and made many connections which are now useful for me.

What is your education?

I have a bachelor in Plants Science from the Haramaya University.

Where do you get your products from?

I have a list of different importers located in Addis which supply chemicals mostly from Bayer Crop Science.

For which plants do you sell seeds?

I sell for Tomato Gelila, onion, pepper and cabbage.

What do you perceive as the main challenge for your business?

Awareness about pesticides from the farmers is still quite low. Also they don't understand how to apply correctly. In Meki there are more than twenty competitors which I have to face.

Climate Change:

What's your opinion on climate change as a crop scientist?

From experience, irrigation users do not face real problems concerning climate change, they are more worried about market problems such as fluctuation prices, some even benefit from CC because rain fed crops are much more affected, thus they can sell off their products in a market with less competition. Most diseases affect rain fed crops.

What is your opinion on your current situation?

I am happy with the situation as it is, I want increase my business.

Observations:

Made a professional and knowledgeable impression.

Interview 8

09-04-15

Input Supplier

Meki

"Arco"

Age: 32

He started his business 6 months ago, before he was working on a state farm called "Luna" as an expert in crop protection.

What products are you selling?

I sell chemicals for pest control and crop protection.

Do you sell fertilizers?

No, I don't. I would like to but because a shortage of capital I cannot afford to make the investment to take fertilizers in stock.

Who are your main customers?

My customers are research center farmers, private investors, cooperatives, small scale farmers and semi-commercial farmers from around here.

How do you decide which pesticides are appropriate?

Either the farmers bring the disease ridden plants into the store, or, if needed I also act as a consultant and visit the farmers on the field.

Do you charge the farmers for your service as a consultant?

No, I don't. I am doing it to build a solid customer base. When they are happy with my service they buy from me and come again.

What are your experiences in the market since starting your business?

I experience a rise in the demand for pesticides.

For what pests do people demand the most pesticides?

Tuta absoluta is on the rise, it is caused by the white fly.

Which pesticides do you recommend against this pest?

Acetamipid.

Where do you get your supplies from?

I get it from Teferi distribution and they get it from Bahir company in Addis.

What is your education?

I left school after 10th grade.

Do you give the farmers credit when they face immediate problems?

No, I don't have enough funds myself to offer that to the farmers.

What do you see as your biggest challenge in your business?

I don't have enough money to invest in a great assortment of chemicals. But I am content with what I am doing and I hope to extend my business in the future.

Observations:

The shop made a clean, sorted and organized impression.

The shop offered insecticides like Girgit Pluse, Sarikas, Dimeto from China, Agro-Lambacin from Singapore, pesticides like Acet 20 SP from China, fungicides like Nativo, Rova 75 WP, Uniceb, Mancozeb, Ridomil Gold, Natura 250 EW, Indom

Furthermore: Caprocaffaro, Saboxil from India, Barnum F1 and Red King F1, Fostonium, Karilaxyl, Domark, Green Miracle by Stanes

Interview 9

09-03-15

Meki Labor Market

Interviewee 1: woman, 20 years old from Osana (100 km south from Meki)

Job Situation: Comes to the market since 1 year, takes every job she gets. Brokers create connection between worker and farmer, then farmer picks up laborers at the market. Usually she works 2-4 days/week. At the moment she is harvesting tomatoes, green beans and pepper. Earns: 40 Birr/day for 10-11 hours of work. No competition between men and women as activities are gender specific (female activities are usually

paid lower). No insurance: if she gets hurt there's no help. Best job: onion planting. Worst job: harvesting of green beans

Education: finished 7th grade

Life in Meki: Rents a shared room: 150 Birr/month

Interviewee 2: Imuyi, female, 27 years old from Dugda district (40km from Meki)

Job situation: Comes to the market since 10 years – brokers usually ask for work experience, not for education. Earns: 50Birr/day. Best job: planting beans, goes fast and they are being paid per bag. Worst job: harvesting green beans.

Education: finished 2nd grade

Life in Meki: has 2 children, both attend school, she gets help with the children by a children charity organization. She visits her home in Dugda only once a year.

Interviewee 3: woman, 28 years old from Woleita (south from Meki)

Job situation: Worked as kitchen-aid in Addis, due to health problems she changed to farm work. Comes to labor market every day. Earns 50-100 Birr/day depending on the job she does – usually she harvests green beans/peppers or transplants seedlings. She says there is no broker involved, but a representative of the farmer comes and picks her, then she is usually allowed to choose up to 20 other skilled women to come and work with her. Sometimes she works for the same farmer for one or two weeks, depending on the harvest. There is no competition for jobs with men - as women have their own qualities, gender-specific activities! Working hours: from 10am-4pm (product has to be packed and loaded until 4 pm so that it can be send to the markets and in the morning they can't start so early as the products are still wet from dew and therefore more perishable). There is no insurance, she has to look out for herself. No contract, payment is usually fair (if it isn't workers gather and go together to the farmer and demand the payment). Worst job: harvesting green beans, as they need a lot of care. **Education:** no formal education

Life in Meki: no children, rented room for 200 Birr/month. It is difficult for her to live off the money she makes. Her faith is in god that she will find a better job soon (she hopes that her health gets better soon so she can work again as kitchen-aid or house maid)

Interviewee 4: Huluager, female, 35 years old

Job situation: started coming to the market this year, before she sold self-made Arake from her home. But this was not profitable enough. Most common work is planting and weeding, she earns: 40-50 Birr/day.

Interviewee 5: Askala, female, 38 years old from Meki

Job situation: she comes to the market since 3 years, used to work in a hotel to prepare food. This was not profitable enough. Now she earns 40-50 Birr/day for weeding and up to 100 Birr/day for the planting of onions and green beans. The money she earns is barely enough to make a living. There is no contract, payment is agreed on before work,

sometimes payment is refused, then she just goes home, she has no power to demand the money

Interviewee 6: Alem, female, 21 years old from another Kebele in Meki

Job situation: she comes to the market since one year. Earns about 50 Birr/day – not sufficient for living. Her main jobs are cultivating, weeding, and collecting of tomatoes and haricot beans. She never had any trouble, she's always been paid.

Live in Meki: She still lives at home with her family

Interview 10

09-04-15

Red Onion Traders/Family Business

Interviewees: Two girls Wubit (13) & Dagmaut (11)

Household: in total 6 members: 4 children, 3 attend school, one is too small. Onion-trade as only source of income, rarely enough for living (children help whenever they can, e.g. holidays)

Method of operating: Family buy onions from farmers and sell them on the street (their stand is located on the main route to South Ethiopia, onions are sold to travelers). No records, documentation of the selling. The family does neither pay rent, nor tax for the selling stand. Very insecure land-ownership/no ownership of land when the government comes ad tells them to leave, they have to leave.

Product availability: Onions are available throughout the year, but price varies from season to season and also during special events like holidays or fasting days

Prices: The family gets the onions directly from the same small scale farmers (direct contact to the producer), every 3 day they purchase 1000 kg: Buying price: 10,50 Birr/kg) Selling price: 12 Birr/kg, if someone purchases over 50 kg the onions are sold for 11 Birr/kg

Profit: 300-500 Birr every 3 days, they sell 10 quintals in around 3 days, 4000-5000 Birr daily turnover

Interview 11

09-01-15

Small-scale Farmer

(Female) Qano

Personal information: 40+ years old, no formal education. Mother of 4 sons and 2 daughters, one son is at university, the two daughters are in fourth grade. The 3 other sons didn't want to go to school as they wanted to become farmers. Family migrated there 4 years ago (they migrated as their former land was too small and couldn't sustain the livestock), the land they live on now used to be virgin land. They prepared it with organic matter. The plan is to start irrigating to grow green pepper and cabbage.

Farming: Whole family is involved in the farming activities. Husband also helps with weeding. She fetches fresh-water from Meki with their own carriage. She doesn't face any real challenges, she has enough children. They also own 1.5 ha somewhere else to grow maize and keep livestock (oxen, donkeys and small ruminants). Maize and meat from that land provide them with income. They mainly produce for their own consumption and oversupply is sold. Her husband brings the oversupply to the market.

Gender sensitive activities: She has no decision making power, has no information on how much her husband sells/earns/spends money on. But if she's in need of money, he will give it to her. The land use right is registered on both of them.

Interview 12

09-01-15

Small-scale Farmer

Robert (male)

Personal Information: husband of Qano, father of 6 children, all go to school. He was born on this land, land is registered under his name.

Farming: They cultivate maize, teff and wheat on 1,5 ha. They don't use irrigation because there is no money for water pumping but they want to grow vegetables in the future. Not a member of a cooperative, only in the traditional money saving scheme IDR, but they think about joining an irrigation cooperative in the future. Not enough money for agro-chemicals. He wants to get credit to grow vegetables: 6000 Birr from Oromia Finance Fund, they want to grow cabbage, pepper and other products that are good for the market. He has access to extension services, advised him on the use of agro-chemicals, how to select seeds (advices only for men).

Gender-sensitive activities: if he wants to sell the land they'll both negotiate, decisions are being discussed by husband and wife but ultimate decision-making power remains with him. He takes care of sheep, goats, cows, poultry and plowing; no housework; he also does the broadcasting of teff and wheat and the row planting of maize. Wife and children fetch water whereas the weeding is done by all family members.

Interview 13

09-01-15

Small-scale Farmer

Arragash Baca (female-headed household)

Personal information: 43 years old, widow since 12 years (husband was sick before, very hard time as her children were very young during that time and she had no help), finished 3rd grade, dropped out of school, when her father died. 9 children – 7 boys 2 girls (12-25/28 years old), two girls do development work, one girl and 6 boys still live with her, all attend school. When her husband was still alive and sick they cooperated with other farmers and had common ground, cultivating and harvesting all together after the husband dies she took 1,5ha out of the common land

Farming: She grows teff, maize, wheat and vegetables (onions, haricot beans, tomato and cabbage). She owns 1,5 ha land in total, 0,75 ha are for the cultivation of vegetables, 0,5ha ground-water irrigated and 0,25 ha drip-irrigated. 85% of the vegetables are sold, oversupply (15%) is for consumption. She owns 13 cattle, 4 oxen and 9 small ruminants and a little bit of poultry.

Gender-sensitive activities: Children help with farming activities, ploughing is done by her sons and hired laborers. But she also hires help for weeding, planting and harvesting and has one permanent worker. All children help with housework e.g. cooking, sons included.

Marketing: First she searches for market information (customer trader informants, extension service experts and peoples from the markets) and how low/high the actual price is. She waits until traders or wholesalers come to her farm-gate and if she doesn't like the price she takes her produce to the Meki market. Through brokers she's connected to the market in Addis, but she does not trust any of the middlemen. That's why she invests that much time in the acquisition of market information. Cereals are rather brought to the market by herself, vegetables are rather traded by brokers and traders.

She also has storage facilities, to store the cereals until the prices are higher.

She's member of 3 cooperatives and one traditional group:

Female coop (17 members)

Saving 20 Birr/month as insurance in case of emergency, and she's the leader

Dairy coop

Dairy cooperative was not profitable (did not produce enough milk to function), so she left the dairy cooperative and started to fatten for meat production. They purchase young calves to fatten them, focus on meat production. She fattens the oxen herself.

Generally it is rather male dominated, but as the activities are profitable she got involved in it.

Irrigation coop

Not working very well, member since 5 years. People leaving because they're either too old or too educated. Begitu erina (name of coop.)

Traditional coop Idr (she's counted as 2 persons as her husband passed away, member of the female Idr as well as the male Idr, she's not the only woman in the male group): Ird is a traditional group in which people from the same community help each other in several social occasions as weddings, grieving times, etc

When her husband was alive, the land was ploughed and harvested by the cooperative. And the profits were shared – during the DERG regime. After the regime collapsed, she took 1.5 ha out of the cooperative to register it under her name and to work on her own.

Daily routine: No break during the day, starts at 6am with preparing breakfast, cleaning house and garden, weeding, milking cows, provide feed for animals, watering day ends at 10pm. She's the one who's managing and monitoring every activity at the farm, everything is under her control.

Constrains: Field work and harvest time are the hardest and when the children are at school it's hard for her to cope with all the farm work. She's on her own with monitoring and supervising everything – her eyes have to be everywhere. Especially in harvesting times she is not happy. Everything is harder for her than for a mHH, as man and woman usually can help each other.

Extension service: Very supportive, she gets more support than men. She got a credit from the Oromia Walko Saving Institute. 5000 Birr a few years ago which she paid back already. She used to be a member of the Meki Batu Union, but it was difficult for her with her children being that young. Wants to join this year again, as most of her children are old enough. Benefits she expects from the Meki Batu Union: better/fair prices for her products, so that she can avoid the brokers. Better prices for agrochemicals. Access to credits.

She produces her own seeds. She gets improved seeds through the extension services/cooperatives supply seeds for her to grow, they buy it from her in the end. The land was formerly registered on her husband's name, but when he died the land was transferred to her.

Position in community: The Kebele (where the ffh lived) has 773 households in total and 102 fhh. She's a role model for the whole East Shoa Zone (according to a member of the DA) and only very few of the fhh are in a similar position like her. Problems of the others, they didn't follow the DA's advices, don't participate in groups, and are not diverse enough (only depend on agricultural activities)! Focus only on one crop. Only 18 other fhh follow her example. There's also women in mhh who do traditional male activities like her (fattening,…..) She has a good relationship with the male farmers. She discusses everything with her children/family first and then again with the extension service to get feedback on the decision they took.

Climate Change: This year very little rain, she expects low yield in the cereal harvest, vegetables are the only crops that are irrigated. Vegetable production: pump didn't work for 3 weeks (electricity!! Generator in her area was broken/destroyed, no electricity at all) she had high losses. Therefore many plants died. She pays 1000 Birr/year for the electricity for the water pump. The most cost intensive part on the farm are the daily laborers, fertilizers and pesticides.

Interview 14

09-05-15

Potato Trader

Chaltu (Female)

Personal information: 25 years old, she attended school until 4th grade. Her hometown: Beshangu Rana. Potato trader (at main route down South), subsistence farmer. Her husband works as daily laborer. Own plot of land is very small, not enough to sustain family (3 children: one goes to school, 8 years old, rest too young. She hopes for her children to become a doctor, a teacher and an extension worker)

Business: She goes to the market and buys potatoes from trader/wholesaler (who get potatoes from farmers). She sells potatoes to travelers (since 8 years), it's her business and the single income source for her family besides her husband's job: She earns 30 Birr/quintal (but sometimes it takes them even more than a week to sell this quintal)

Farming: The land they live and cultivate on is from her husband's family: 0,125 ha (registered on husband's name). Grow only cereal crops, grow products mainly for subsistence and they don't have livestock. They can afford 3 meals/day. She has access to extension services (family planning, row planting). Constraints: they do not own enough land and she would need 20-50 Birr/day, but only has 20-50 Birr all 3 days to go and buy things)

Gender-sensitive activities: She does the housework, weeding, child care; husband ploughs and she does all the other farm work (as he is working as daily laborer).

Interview 15

09-02-15

Worker at the Onion Packing Center

(Female)

Personal information: works there since 7 years, finished grade 8 (precondition to apply for the job as peeler) She is a permanent worker of the Union, only temporarily in this facility.

Business: onion peeling is exclusively done by women and better paid than other activities: 1 Birr/kg onion (a good worker can make 50 kg/day) not enough for living, and it is a very tedious work. Washing is being better paid and done by better educated women because they don't want to do the peeling. Work time: 8.00-17.00. If Union is profitable the workers get some share of it, medical support when workers get sick but no possibility of pregnancy leave. Workers hired based on skills and previous experiences: 30 female and 10 male workers at the moment in the center. Some underage women have the chance to gain some money during the holidays, based on skills and previous experiences.

Interview 16

09-01-15

Small-scale Farmer

Gifty, 18 years, female

Education: went to school until grade 8 – she tried to continue her education after getting married, but there is no time for that. Her parents are farmers as well.

Life: Married to Abati, 24 years, went to school until grade 10 – no children

Farm: 1,25 ha, land is fragmented, haricot beans and 0,25ha are irrigated cabbage. They are no members of the irrigation cooperative but use the pumps anyway. They don't pay for the electricity of the pumps. Drinking water is transported to their farm via donkey transport from Meki (payed service). All of their product is being sold on the Meki market and they use the leftover for their own consumption. Brokers come to farm gate, if Gifty + Abati don't like the price, Abati brings the produce to the market. Quantities: 0,25ha for cabbage 16 quintals per season, 1600kg. 100 kg = 60 Birr. Marketing and selling completely at his responsibility.

Gender Sensitive Activities: Land use right registered on husband, all other resources belong to him as well. She doesn't have another source of income, he controls the family spending. Gives money to her if she needs it. They're helping each other as much as possible. Daily routine, she starts with preparing breakfast, homework, weeding, looking after the cows. If it was socially accepted, she would plough as well. But the common belief is that if women plough, the rain won't come. Main difficulties for her: preparing DABO (workers from village that help farmers during harvest time, payed with food and drinks)

Interview 17

09-08-15

Solidaridad

Solidaridad was founded back in the 70s as a very small foundation, it used to be a foundation focused much more on gender and society building – we started in Mexiko, Guatemala that's why we chose the name solidaridad. In the beginning of the 80s our director initiated the Max Havelaar Label, later on we began the "Fairtrade Foundation" which is now a completely separate organization. All that was initiated by Solidaridad: to push companies to invest in fair sustainable trade, especially linked to the coffee sector. In the 90s we developed a lot of initiatives on the market side – guishii, a fashion brand for organic cotton it's now an independent brand. We developed it at a time where no companies were interested in investing into organic coffee, we developed that brand to show the markets companies in Europe and the Netherlands that there is a successful business case for sourcing sustainable resources.

Around 2005 Solidaridad made the decision to go from a Dutch based organization to a more international network organization with regional expertise centers. Because what we used to do was support local organizations to strengthen them, help to provide services to farmers but it was really based in the Netherlands. We have 10 regional expertise centers – for example one in Kenya, where our office for East and Central Africa is. He can choose with whom he would like to work, which sector, it is a very autonomous office but they are linked to a broader mission and vision of the network. The idea is, that those offices are responsible for implementing project. Let's say in the past, most work we did was linked to supply chains of tea, coffee and cocoa (traditional exporting crops) – what we tried to do was "supply chain development" so we try to work from the markets, with companies, for example coffee roasters that have ambitions to source sustainable products from Uganda, Ethiopia, Indonesia. So what we do via those offices is to develop capacity programs to address environmental, social issues in these supply chains. As there's many things happening, for example if you look at coffee: most of the production is done by smallholders, if you take Ethiopia these farmers have hardly any capacities, the service sector is very bad, there are no financial services, people have the wrong ways of dealing with pests or diseases. It is very difficult for farmers to understand what they can do, even if it is very simple practices which they can adopt to overcome those challenges. So what we do is developing projects with different stakeholders in the sector. With vegetables for example: we can work with input suppliers, the government, Ministry of Agriculture, companies who are interested in supporting smallholder farmers and we're linking that to supply chains of companies. So if you think supply chain development, we work market-driven. What we don't do is work only with farmers. Because if you do that, you train the farmer, you invest a lot of him and in the end he has a product – which he needs to sell. So we also need to make sure that we're also enabling other actors in the supply chain that they'll support and buy the products of the farmers.

Do the farmers get real contracts if they work for some companies or does it stay informal?!

A: Different models. We have a contract forming model. In Woleita we have a Dutch vegetable producer who has 25 ha of tomatoes and onions and he's willing to support smallholder farmers (0.5-5ha). So he's offering contracts to them and they supply to him and he helps them in terms of technical assistance or with tomato seeds. That's what we

call an out-grower model or contract farming model: it's based on a contracts where smaller farmers supply to a bigger farm.

In the second model that you have independent farmers with medium-sized farmers who have 5-25ha.

Third model, the most common model in Ethiopia, where the farmers are organized in cooperatives. The idea is that the cooperatives collect the product and then help the farmers to market it. You know you have a bigger impact if you have a larger volume of the product and they can negotiate a better price.

I read that in Ethiopia the dairy cooperatives are very strong. How would you assess vegetable cooperatives?!

We work a lot with coffee farmers and coffee cooperatives. As coffee is such an important crop for Ethiopians and as many coffee farmers also grow fruits and vegetables, so we try to convince some of the coffee cooperative not to only to focus on improving the livelihood and the coffee of the farmers but also to look at the whole farm. To acknowledge that they also grow maize and enset for example or intercrop coffee with cabbage and beans. We're trying to look at the whole picture. We did a baseline and we found out, that a high number of coffee farmers is food insecure for some months of the year. You can harvest coffee twice a year and then it gives you a lot of money in the hand. You can spend a lot shortly after harvesting and they don't have any food security issues. Later in the year there are some months that are very difficult for some of those coffee farmers. There is no saving culture and women have less money to spend than men – men own most of the incomes from the sales of those cash crops and spend it not on the right purposes. But coffee is not a daily income. And then they also have a huge potential to produce vegetables but they really do not pay attention to that as coffee brings the big cash. But these farmers also need a daily income to make sure they have enough food for subsistence - or if they produce more they can sell it on the local markets. Around that principle we have developed a program with a lot of different partners, even multinationals are involved in that to look at the food and nutrition security of coffee farmers. So here in Ethiopia we've developed a project in Oromia and the South, Yirgacheffe and Sidama we're working in cotton and textile with H&M and Marks and Spencer – but this has nothing to do with fruits and vegetables. And we do dairy of course and that's of course interesting as most of the farmers have livestock as well so in some of those coffee areas we work on improving the dairy practices.

So far we haven't been engaged with the Ethiopian Horticulture Agency, we usually get involved with all the organizations and agencies of one sector, but here we work with fruits and vegetables only via the coffee angle and now we've got a project in Arba Minch, which is a food corridor. So we have a cotton project there, the farmers produce 25% of their income through cotton, 65-70% through fruits and vegetables. So we're trying to develop a bigger program on food security to make sure they got some cash from cotton and at the same time grow fruits and vegetables for their own consumption/the local markets. So we're changing a little bit, we used to work only with goods linked to exporting chains and international markets (cocoa, tea, coffee). We were supporting farmers to get international sustainability certifications but now we're rather focusing on local value chain development. We will engage with the local ministries of agriculture, the government has a very important role to play in this sector, they are involved on every level (federal, regional, zonal, district, village,…) and provide a lot of extension services, but those services are very weak. But we're working with them to work on those services. So Solidaridad's role is to enable other organizations (locally embedded ones) to support

farmers to address issues they cannot address at the moment – like climate change, nutrition, food security…. But we also work with the private sector with input suppliers, supporting vegetable farmers by helping them to access better planting material. Conditions they need in order to produce better. Cooperatives are also being addressed by us. So we intervene at several levels farm level through training, knowledge capacity building and at cooperative level, usually those cooperatives are very weak, they're no functioning businesses. And we hope by strengthening them we hope to make it easier for them to get loans, to organize, to be more transparent or to access information or linkages with companies. At the moment it is very hard for them to get a loan for example, they don't have a system, they cannot show their assets, their production – they should be running like proper companies right?! With documentations with proper responsible members. In Kenya in some cooperatives for example a new board is being elected after two years, so new members come every second year. Even skillful people have to go. So if you build capacities within such a board you have to do it again every other year because those people will be lost. So for a proper cooperative you need a separate team of people that is responsible for things that stay (financial stuff, organizational things) – so that you can build a bit more continuity. These are very difficult things because the cooperative sector here in Ethiopia is very complicated, there's tensions within the cooperatives, board members that are not transparent, members that do not trust the board members of their cooperative, cooperatives that distrust the unions. Sometimes there's also unions that are umbrella organizations above the cooperatives with the idea that they can buy part of their products to sell them on. It's very difficult to turn those cooperatives into viable businesses. Nevertheless we have to try as they're an important vehicle for farmers to sell their products.

We know from our institute that many farmers are no members of cooperatives, because the entrance fees are too high and distrust. Smallholder farmers also have the feeling that cooperatives only serve big-scale farmers….

Yeah that's very right, we develop strategies about local vegetable projects so we develop pilots. What generates impact, how can we learn from best-practices, can we share that with other groups, can we replicate that?! We start small and try to develop new things develop new tools, methods. We also cooperate with researchers, universities, Wageningen university (we try to translate their high level research results into something practical/applied/simple tools).

So you visit a lot of farmers as well?!

Ethiopia is a very complicated country for NGOs, usually the offices of Solidaridad are run by locals that is why I'm here - to build a good local team that works with different companies and researchers. So we need to bring capacity knowledge to their teams in the field and they bring that to cooperatives or lead farmers. We do not directly work with farmers. There's 5 million coffee farmers, there must be even more vegetable farmer so we try to link with other groups as well….

But there's a lot of work to do but it completely depends on the sector you want to work in, for vegetables for example it is more about organizing the production, I think the market is there. For any farmer the market is not really the problem, the demand is very high, you have to look very careful for good mangos, even though there's a lot of mango producers not all reaches the market. The demand is increasing but I think it's organizing the supply which is the bigger challenge. At the level of the farmer, there are simple

practices to help the farmers become a little more resilient to weather patterns, or with input supply (sometime they use their own seeds, replant them and have little yields), they still use a lot of pesticides in the fruit and vegetable production (harms the soil, environment, very expensive). So again simple pest-management practices you can reduce substantially those pesticides.

Pesticides are they also a health problem for the farmers?!

I know in cotton it is a big problem. What we're trying to do is mostly translating those research results into practical trainings and link that to marketplaces. Processing, storage, cooperative development – is where we try to link up with other stakeholders input suppliers, government players, small and medium sized enterprises, investment funds (financial services for cooperatives to give loans and assistance). It's not only about improving production, it's also about food waste. We're the enabler, Solidaraidad is bringing all those organizations to one table, and we link them up and develop a strategy/build an alliance. For fruit and vegetables it is really local and regional markets and supply chains, the demand is growing and growing. So suddenly we're not only looking at exporting markets, but we do have the regional markets with high demands!

Is there a strategy to access the markets directly with cutting out the brokers?

I give an example for dairy products: We work with those milk processors, we try to see how we can get a direct relationship with the farmers. The only way to do that for the is: farmers need to be professionalized with processing facilities at village level, a lot of control to create that security. ja brokers are very common in Africa and they're a big problem also in Ethiopia. Also for the companies we work with, they would like to invest into the relationship with their farmer. They can invest a lot of money in trainings and capacity building provided through us but then they're not assured that in the end the product is being sold to them. That's a big nightmare for a lot of companies. In Mozambique in order to deal with the brokers, we built a company very close to the farmers at village level. And this company is doing everything: they do storage/packaging, supply farmers with planting material and channel the products to markets. But it's still very difficult. Other companies try to distribute seeds to farmers as collateral or have contracts to ensure they wouldn't go to brokers with their produce. A lot of companies invest a lot into that relationship to their farmers. What they want is their product, they have a market so they need a stable supply to saturate the demand. So there's good and bad examples for… I know an interesting company called African Juice, passion fruit/mango company and for them it's very difficult to convince farmers to trust them. Last month I spoke to a farmer and he said that he got 2$/kg for his passion fruit and now he only gets 1.9$/kg, he insisted on getting 2$ no matter how bad the price fluctuations were. Those are very delicate issues, and some farmers feel as if the companies is cheating on them. So the companies need to talk to the farmers and have to explain them the concepts of markets and price fluctuations. I think the method to address this is diversification, depending on only one produce for survival leaves farmers in a very vulnerable position. So they need to spread their risk. But we don't want them to switch from one good that fetches high prices to another one, as sometimes the farming practices are completely different. They can't successfully grow onions in one year and then switch to mangos. So what you get is very short-term driven people without a stable income. Combining cash crops with food crops is our method, but it's very difficult.

Certification is very interesting for farmers to enter certain markets, but it's very limiting, the impact is very modest. We need to look more at the priorities of the farmers.

Do you also look at processing of vegetables?

In Kenya they've got a horticultural program which involves a lot of processing, but here in Ethiopia we're not that far yet. We'll also start with horticulture projects in Uganda. We're much more focusing on coffee and cotton here in Ethiopia, so that's very different to fruits and vegetables.

Do you have some examples for your gender-related projects?!

We don't develop different projects for gender, we try to incorporate it into l our projects. We've got an inclusive supply chain which means that everybody should be participating. But if you look at the coffee sector again, most members of cooperatives are male. But women still do 60% of the work in the field. Usually they're left out when it comes to trainings or support services. We try to develop a gender policy with the company we're working with (e.g. Oromia Unions – 700,000 members). But it's not about equal rights or women empowerment, we develop a more general strategy. We for example try to ensure that women can also participate at agricultural trainings. We consider it like food security or climate-smart agriculture as a cross-cutting issue, the core of our work is sustainable supply chains. Organizing the production and linking it and facilitating those linkages for farmers. And then the cross cutting issues we try to integrate them by developing tools and other methods. We're funded by the Dutch government, so we also have to be very transparent about how many women and men we reach. We have to incorporate all that in the planning phase of our projects already. We do have a gender specialist now in our office in Kenya, so if I need to develop a project she can help me to integrate gender into our planning. It's difficult for us for example in working with the coffee cooperatives we can ask them why women cannot participate to the same extent as men do (for example also with voting during the decision making process). But then they say "well each vote is related to a piece of land" and as long as the male is alive, he'll be the voter. But what we're doing now is not telling them what they should do, we try to include women to prove to them that integrating women brings benefits for the whole community – then you can really generate impact and maybe also influence other communities/unions. Women do most of the work on the farm, so if we train them, this will have strong impacts on the quality and quantity of the products. But you can't enforce things like that on unions from one day to another, it can be very difficult if you don't have a common understanding with your implementing partner. The Ethiopian government is also trying to motivate women to become part of decision-making through taking over leadership-positions. For example in the dairy production, 80% the farmers we work with are women – so women would control the resources and the money that they earn through their dairy business. But we should also not imbalance that system, so that the women are getting issues with their husbands. That's why we need local people, which are cultural and agricultural experts.

In the GTP women and children are a big issue, is that something you witnessed as well?!

We also work with enabling policy environment, in the long run if the policies are not enforcing or at least promoting some of the sustainability issues or strategy within the supply chain it is very difficult to get long-term effects especially in a country in Ethiopia.

So for example with the cotton we try to provide input at the strategic level that can be incorporated in the national strategy which will be the basis for the GDP. We're trying to influence policies through firstly build evidence on the ground (what works and what doesn't work?!) And then secondly bring that to a larger group of stakeholders and show them this is working this is beneficial for your people. Issues like gender should be part of this knowledge exchange. That's kind of a vehicle to share information and influence people at the same time. In the coffee sector, we try to include women as the play such an important role, but the government is not doing this or regional level the development agents they don't have the knowledge or they just don't care. But if we have a clear case and if the locals are supporting this (as it generates impact) we can incorporate that in plans of the government. But these are long-term objectives and strategies. For us as NGO we first need to establish our reputation and the cases that speak for us, but at the moment it is very difficult for us to get registered as a NGO. We've been working on it for 10 months and we're now at the final stage, but luckily we're on the safer side as we're working with sustainable economies and not with human rights. For the government it's very easy to push an NGO out of the country. Through having this really difficult registration process they scare away already a lot of NGOs that don't want to go through all of that. That's one way how they protect their closed system.

Climate change: we saw that small scale farmers don't have to pay for water, so if it doesn't rain enough they just pump more and more water from rivers or groundwater. Do you have trainings for mitigation or sustainable irrigation systems?

Well in the coffee production we developed climate-smart agriculture, in Latin-America we're much more ahead in those issues (like climate-smart agriculture or sustainable landscapes). We try to borrow knowledge and best practice from Latin-America and in the coming months we'll develop a strategy on water harvesting, watershed management. Irrigation is not such a big thing in the coffee production, only with the large-scale producers. In fruits and vegetable farms there's more farmers that use a lot of irrigation which is a critical issue. In Ziway there is a big project on sustainable landscapes: the big flower farms, vineyards all use water from Lake Ziway. Pesticides runoff into the lake, smallholders use the same water, there's an issue of water-management. HOAREC (http://www.hoarec.org/index.php/en/) is a group you should visit, they have a project there involving a lot of stakeholders. For our projects I would like to combine modules on climate smart agriculture or food security on producer level by several modules dealing with all those issues integrated in one package. How to measure is difficult, water-use, emissions, carbon-use….a lot of companies buying the coffee are very interested in carbon balances, transport, pesticide use, deforestation rate and that's very complicated. We developed some tools in Latin-America which we would like to try in Ethiopia as well. A lot of coffee farmers still cut wood for making drying tables for expanding their coffee fields which is not very sustainable. So we'll try to address that climate issue.

We met some potato farmers that lost their whole harvest, is there some sort of crop insurance based on weather data?!

These things are coming up in East Africa as well now, but I haven't seen anything in Ethiopia so far. That's a big issue, part of the problem is that it is so complex. Farmers lose all their harvest through a combination of factors, so for example if they had newer seeds they'd be more resilient to weather shocks like that. But for example there's a very easy conservation practice and we try to adopt it: so you dig holes and then you fill them

with organic matter (MICRODOSING) and those organic matter clumps absorb a lot of water and store it during the dry season and feed it back to the plant. So that plants can overcome 6-7 months.

Price fluctuations – do you know any other mechanisms (besides diversification) farmers use to secure their income?!

At cooperative level there are some trainings, for example coffee can be stored over longer periods, so there are trainings on how to obtain a loan to overcome the harvesting time without selling their coffee at really low prices. And when the prices go up again, they can sell the coffee and payback their loan. But that only works with cash crops. With fruit and vegetables I don't know. But I guess there must be some at cooperative level. It's a difficult problem

We heard there's a lot of problems with nutrition and a lack of knowledge?! What do you see as the biggest problems in this area?

Most of the programs we do are about developing supply chains and increasing production and productivity as if you have more cash crops you have more money and buy food and if you have more food you have more to eat. The whole nutrition issue is not addressed – in FOSEC (the coffee food security program we're working on now) we cooperate with Nestlé who has a big global sustainability plan. They have a lot of nutrition people with whom we developed livelihood zones for all those regions with different characteristics. For example in the South you can't grow maize but here in the North the farmers grow fruits and vegetables next to coffee. So we got a lot of information on household consumption and nutrition problems. So we found out that people eat a lot of staple crops, so if you only eat staple crops your food is very limited. Farmers sometimes produce cabbage, beans, maize or spices but they won't eat it, and they'd rather sell it on the markets. The understanding of that is the first step and the second step is developing a program to address nutrition. There are a lot of programs focusing on children but for us it is important to teach the farmers/the parents on nutrition as they will be the ones deciding on what to grow for consumption. For people like Nestlé they need those household profiles, so that they can compare it after five years for example. That's why we also team up with Nestlé as they have all the knowledge on nutrition – our role will be translating our findings into applied programs that we can us when we work with the farmers.

Do you work with DAs on woreda level as well?!

We develop combined training programs on culturally accepted food crops and their nutritional value, we work with the experts of the unions/research institutes/agricultural offices, which we train. Those experts then go out and train the development agents and the lead farmers. The problem with the DAs is that they have very general knowledge about agronomy, there's one on livestock, one on agronomy one on nutrition and health. They don't know anything about coffee, pulses, and beans, dairy – there's a large knowledge gap and a capacity gap. If there's one DA and he's responsible for 2000 people, I don't know if he's going out then to give the trainings - there is no incentive. He's paid by the government, but he does not have to report back to the government what trainings he gave or what he did the last month. That's part of a system which is very weak, that's why we also work with the private sector. The people from the private sector recruit their own agronomists in those villages, that's why we don't focus on the

government if we can have agronomists that are better than the DAs. This should be ok, as long as we somehow try to involve the government as well. We use both ways to reach more farmers. ATA is working parallel with the ministry of agriculture and they're thinking about models to introduce the whole day. They're advising and reporting back to the ministry of agriculture all the time. The only problem with ATA is that it is very high-level again, where we think it's rather the people on the ground that have to be reached. But also all the NGOs have to organize and cooperate much more instead of working side by side without communication. There could be really good solutions out there already without us noticing it. That's what the Dutch embassy is trying to support.

Interview 18

09-03-15

Tomato Trader

Woman, 30 years

Job situation: She works with tomatoes since one year, before that she used to trade gasoline. Most of the traders are male, but there are some female traders as well. No real competition with the male traders, as the farmers don't care whether the trader is a woman or a man. Success depends on price negotiation and experience. She is a member of a female trade cooperative and they share the risk.

Interview 19

09-03-15

Input Supplier

Personal Information: we spoke to the son helping out in the shop - he studies civil engineering at Mekele University

Business: They sell fertilizers, pesticides and insecticides – agrochemicals. It is a family business, the whole family is involved – also the mother and the daughters. They also do have their own farm, they rent 3 ha from other farmers, 40000 Birr/ha/year 30 daily laborers per day male and female. They produce tomatoes, were not that successful this year as the tomato price is very low.

Advisory services: They give advice about the products they sell. Their customers are female and male small scale-farmers. Most of them know better how to apply and use the agrochemicals – better than the input supplier themselves.

Supplier: Get their products from Nazreth and Addis directly from the importer, he is convinced that there's no female input supplier in Meki. Sometimes they face supply shortages, but they can be usually be compensated through substitutes. During the first appearance of

powdery disease it was difficult to help the farmers as adequate pesticides were not yet available.

Farmer's problems: If farmers can't afford a whole bottle – they are not able to buy only half bottles. But farmers often purchase agrochemicals together and share them amongst each other. In case the agrochemicals don't work, the input supplier advises the farmers to use more of the produce. Biggest problem for the farmer is the powdery disease and financial problems (to pay for the agrochemicals - 1 bottle of Hollice, to fight the powdery disease costs 1000 Birr)

Interview 20

09-04-15

ABINE Women's Cooperative Vegetable and Fruit Collection and Selling Center

Interviewee: Momina (35) = female farmer, trader and member of the cooperative

History: Cooperative established since 15 years, started with 20 members, now they have 83 members = 80 women, 3 men (one disabled men, one widow, one auditor) -> all other positions are held by women

Method of operating: Cooperative buys vegetables from farmers and traders (seldom) and sells them in a small shop (Onion, cabbage, beetroot, lettuce, pepper). The members of the Cooperative go to farms and buy products directly, products have to meet quality standards of the Coop

Problem: the cooperative's shop did not sell everything, thus the members of the cooperative thought about a new strategy to increase the shelf-life of their products processing of the products: Mitmita, Berbere, dried pepper

Support: the cooperative got help from Oxfam America and the Ethiopian government, they built the cooperative's shop with help from gov. and additional money of the coop

Aving scheme: 0,5 Birr per member/month in the beginning, now: 30-50 Birr/month from their own income this money and the income of the crop goes to one bank account, members do not have access to it

Benefits for members: credit service, training for vegetable and fruit cultivation, business training provided by Oxfam and DA. Benefits for Momina: she is selling her products to the coop when she is meeting the standards, if not selling to local market

Interview 21

09-04-15

Road Seller

Shashamene

Interviewed by entire Income Generation Group

Interview of one roadside seller, however others added to the group

Introductory remarks by Allele

Is he a farmer actually or is he only a seller?

He is a farmer as well as a trader.

How big is his farm and what kind of crops does he cultivate?

He has 2ha land. He has cultivated potato, maize, teff, soya bean.

and his land is not irrigated, I guess?

It is only rain-fed. No irrigation at all.

And does he mainly produce for his own consumption? How much of his total production does he sell?

[What he said is] the majority of the product is for the purpose of market, it is commercial. And the remaining is for own consumption.

Can he say how much he needs for his family?

For potato, I can harvest 15 quintal [1 quintal = 100 kg] per hectare, the whole production is for market purpose. For the other, teff and maize, 50 percent is for market purpose; the other is for home consumption.

He said that we can sell potatoes as total (by sack), the other, maize and teff, in kilogram, the unit measurement for teff and maize is in kg, but for potato it is not in kg best but he is using some container, it is by guess [the weight is guessed].

[Indicating a container:] For example this amount here is 30 or 40 birr.

Does he only sell at the roadside or does he also go to the market? Or is some trader coming to his farm?

He is selling the products and always uses this place as a (road) market. He is a trader as well, he also goes to other farms and collects potato and also sells potato products here.

You just said that this bag of potato is 40 birr. [Allele: it depends 35 or 40 birr] **At how much would he buy this from his neighbor farmers?**

One quintal of potato from the farmers is about 350 birr currently. [that means 3.5birr/kg]. And he sold this potato at about 500 birr. There is a margin of 150 birr, profit.

Could you ask him if he is affected by water shortage with regard to the decreasing rainfall?

Beginning from the last two years there is a problem of rain. And even in the last year totally we cannot produce potato because of a problem of water, I mean rain. And even at the moment, currently, there is a shortage of rain. There is no production, the production is limited. They say the production of this year is not as such for three years, there is limited supply of production.

When did he last harvest potato? What has changed about the rain? Is it just less or is it not coming when he expects it to come?

In the last season there is some amount of potato production but no totally there is not potato production because of the rain problem – we cannot cultivate potato but instead of potato we cultivate maize and teff and soya bean but no potato production totally here in this season.

But his neighbor or other farmers obviously can produce potato because he sells the potatoes of his neighbors…?

This potato is not from this area, it is from other places, the neighboring district of Shashamene.

Is he planning to irrigate? Is there a possibility to irrigate?

We have a water problem. We do not have the other water. We use only rain.

Would it be possible to introduce an irrigation scheme? With help of the government or with credits to buy a water pump and to dig (a hole)?

What he said is that we do not have any experience of irrigation. That is why we cannot use irrigation, even no experience of using groundwater by pumping, but no experience at all about irrigation.

[Additional comment by Ethiopian student:] The soil type is also sandy, it may not have a water recharge in the ground. The water table throughout is limited, so they may not produce due to limited recharge…

He [the farmer] said so? Or do you interpret that?

Students: the soil type is sandy and it (the water) percolates.

Farmer: There is no groundwater. That is our problem.

Students: Perhaps the groundwater is too deep. The water percolates and the groundwater is too deep to access it]

Does he have experience in collecting rainwater when it falls? Does he have any techniques like that?

They have practiced some water harvesting schemes but he is not as such very experienced in it. And it is not improving well in these conditions, it is thrown away. It is not practiced in this area.

Apart from the decrease in rainfall did he recognize other climatic conditions that changed? Like with temperature? Does he have other problems? Like soil quality/fertility?

There is climate variability starting from four years ago. There is rainfall shortage and there is also water supply for drinking that is limited. So there is climate variability?

What about temperature?

It is increasing from year to year. The temperature of the year is just increasing from year to year. Even if they have no measurement, it is increasing from year to year.

Since we are only dependent on the rain-fed agriculture, if the rain stops, we are losing all of what we are sowing or what we cultivate.

Does he have any security? Savings?

(He is saying that just simply that) I am food-secure. If the rain stops, if the production of the crops failed, just I survive with the trading of such. From the trading of potatoes he gets some amount of income and he can sustain his life. But others that are not participating in such activity they simply are under food-insecurity and there is poverty around households.

Actually the question referred to savings not food security but whether he has any saving opportunities? And maybe other income sources except for his crops and the trading? Does he have any livestock or anything else to buffer?

Simply he is saying that he is practicing the saving but that other farmers are not practicing such saving activities in banks and other micro-financing initiatives.

So in general he earns enough money to put something aside for times when he does not have enough income. He can create some saving?

He saves some of his earnings, just not that much but a small amount of saving.

In addition to the trading and his crops does he also have some livestock or other income sources?

Once he had livestock, three or four livestock, but he sold all of them and now he has no livestock. Because there was an emergency, for which there was cash need, during that time he sold all of them.

Is he a member of a cooperative?

He is not a member of any cooperative. But there is a cooperative around here.

Does he have experience with the extension service system of Ethiopia? Has he ever received governmental help? Or does he know about the possibilities?

Yes, he had been receiving the extension service from the government for last time. But now the relationship is somewhat just decreasing. The relationship between the extension worker and him is complicated.

What was he taught about? Or what was the service about?

The kind of service is… mainly he had been receiving health extension from the health extension workers about child nutrition and some other child health related training he was just receiving from them. Concerning the farming they demonstrated the application of input to him, e.g. of chemicals/fertilizer.

They are still training them how to apply it.

But the extension service has never been about water? He has never even talked to them about the challenges of water supply?

They didn't receive training about water. Comment from the translator: Just someone from his side is forcing him to say that yes, there is training about water.

How many people live off of the earnings of his farm? How many people does he support in the household?

Eight family members. He has four children, his wife, himself and his mother and his ancestor. He is supporting eight family members including himself.

How old are his children? The range of age?

From seven to ten (is the age of his children).

Comment between interviewer and translator:

They are still quite small and they have to go to school?

Yes, they go to school. They are not involved in the farming activity.

(We forgot to ask beforehand) his two hectares, does he work the farm by himself or does he have daily laborers? Or does his family help him? Who is involved in the farming?

(He said) I have no money to hire labor but I am just by myself and with my family members I work on it.

So who works there? He and…does his wife do farm labor?

He and his wife (work the farm).

What work does his wife do?

Every work he does, she also does. And even she has double responsibility to just work at home, then after she finishes the homework like cooking something like that and

washing the clothes then she goes to the farm and helps him. Every activity he does she does too.

Does he consult with her, when he takes decisions on what to grow or what to sell and how to do his business?

Completely he consults with his wife. Not even 0,5 cents will go for expense without her consult (he said).

So she is in charge of the money?

Just we discuss on everything relating family, income and expenses.

Comment: A bystander is his father, who says that the relationship between the farmer and his wife is good and that they discuss everything on family issues.

Two last questions: One is concerning his age: how old is he and how old is his wife? And afterwards: what are his plans for the future?

He is 30 years old. His wife is about 27 years old (not sure).

Whatever the challenges, he wants to move out of these conditions and to improve his life; especially he wants to focus on educating his children, because he is expecting that if they just have good education they can escape out of these conditions.

Any further comments?

Thanks to you.

Interview 22

09-02-15

Onion Processing Center of Meki Batu Union

Interview with female manager of the labor (men and women)

First the onions enter the room, then they sorted, than they get washed, then pealed and weighed and packed

What happens with the leftover?

Its for local market, to Addis

Fungus free onions go to export markets, higher quality standards than for the local market

How many tons of onions did they get this season?

Depends on the order from the exporters

This week 20 Quintals (2000 kg) of cleaned onions came in

What is the capacity of the center?

Capacity is big, but the orders are little

Today 18 Quintals, but they could do much more

Have they ever been at full capacity?

Up to 30 Quintals per day

How does the sorting process work?

Sorting is done by women

First they split the onions into different partitions and then they sort the clean ones out manually.

Why is peeling and cleaning only done by women?

"Cleaning of onion is commonly done by women here in this country (Mengistu translated women) especially in tolerating (what is this kind of chemical? Florens says: its acid) women are used to these chemicals, they are tolerant due to their house…."

Men are used for physical work like loading

Where are the export markets?

They are not aware of the export markets, they just transport them to the airport of Addis and there are buyers who export them further

How much they export to the local and to export market?

The proportion is based on the order of buyers; if order is very little, even better quality tomatoes are going to be sold in the local market.

Interview 23

09-02-15

Permanent Worker at Union Processing Center

Onion processing center in Meki Batu Union

Besides onions they process (packing) tomatoes and cabbage, papaya and melon (and others like a crop called something like virgin)

Up to 30 permanent workers for the union (including this pack house and the office)

Up to 25-30 temporary workers in the pack house

his is the only ware house

What is the capacity per month of the center?

For onions: 30 cages per day (not sure if I understood it right (9:00 minute)

Papayas: they send 7 quintas per day last year, according to the order they got

Usually the order is less than their capacity, so they don't really know their own potential

The order depends on the demand of the importing countries

Washing of onions is done manually

first washed, then sealed and packed in 20kg bags to export it

until transport to Addis airport it is stored in cool place

What price do they get for international market and what for local market?

The packing lady doesn't know about these things

How much energy is used for cooling and what do they do, if there is a power cut?

They have a generator for emergencies

Do the farmers bring their products to the center themselves or is the union/center collecting them?

The cooperative/union is collecting the goods from the member of the coop (the single farmers) and then bringing it to the center all together

What is the salary of the woman?

1000 Birr per month for permanent workers

but they have a lot of temporary workers, women get for peeling 1 Birr per kg

Is there an insurance included? Does she have a sick leave?

Have sick leave and 3 month pregnancy leave (national law)

Even temporary workers have that, too, but they are not paid during their leave

What do they pay per kilo to the farmers and what do they get from the customers?

She doesn't know any market or price related issues

8 to 9 centiliters? Don´t understand?

What are the challenges here? What kind of improvements would she do if she would be the decision maker?

There are no challenges

What problems does she see in the processes?

No problems, it is just about organizing the labor

Are the workers allowed to take leftovers? Things that cannot be sold?

For a reduced price, discount of 70 percent – for the bad quality food

Interview with male purchaser of the Meki Batu Union

Netherlands are the main export country for onion, only once they exported to Saudi Arabia: One cage of onions or 1 kg? = 11,5 Birr

Local market: price is almost similar around 11 Birr

Prices for onions are very high, not like tomatoes

What is the buying price from the farmers?

No answer or not understandable

What are the health requirements/standards for selling the onions to Holland in terms of sanitation?

They come and control farms and centers randomly and occasionally

Where is the proving that these onions have no specific diseases when they are exported to Holland? How can they be sure about quality? Standards? Where do they check the product, when they don't do it here?

At destination (Peters doubts that as they would have been charged for transporting the onions back when the quality is insufficient, so its rather probable that they have a control mechanism somewhere here in Ethiopia already, maybe at the airport (the final point in the country…)

Is there a specific final client in Holland?

They don´t remember the name

Who did the construction of the facility?

CFC company, 5 years ago, donated by the gov., they contracted Ethiopian firms

Interview 24

09-03-15

Input Supplier

Mekki Town: for small-scale farmers

Seeds, fertilizer, chemicals

1st Input Supplier

Different import countries: India, China, Holland, France, Switzerland, Denmark, Israel

Prices are not stable: fluctuation as well, depending on season and situation of supplier (can differ from 200-300 birr)

Seeds for tomatoes, onions, beans etc.: Gallila (1,500 birr), F1 (1,000 birr), F2 (1,000 birr) - names of major products.

Often do have regular customers/ farmers; or at least seek to have those stable and established business-relationships

Buy on order

Products are just provided by trader

Seed supply companies are for example Bayer, Stanes, …

One supplier for seeds, but several for chemicals and fertilizer

Mancozeb 80% WP, India, 500gr

- buy at 50 birr / sell for 65 birr
  Mancozeb 64% + Metalaxyl, India, 500gr
- buy at 120 birr / sell for 135 birr
  Unizeb 80% WP Fungicide, India, 500gr

  Bacticide, China, 1kg
- buy at 590 birr / sell for 650 birr
- with regard to the price 2 years ago: 200 birr buying price (Debre Zeyt)

AgroLaxyl MZ 63.5 WP, China

2nd Input Supplier

White cabbage seed (100 birr/ 120 birr for 250gr), imported from Holland, "Top Harvest"

At the moment no/ few seeds; no season for it right now

3 types Gallila

Packed in plastics or canned (they have different quality standards)

Farmers do not want cans due to quantity issues

Chemicals are sold most this season; highly needed by farmers

“Spritzgerät” for 450 birr or 650 birr (2nd quality)

Lamder, Israel, 1l., 5%

buy at 380 birr/ sell at 400birr

3rd Input Supplier

General observation:

EcoGreen: Ethiopian Organic Liquid Fertilizer (sprayed)

Interview 25

08-27-15

LIVES Project

Participants: Dr. Casai, Mamusha and others from LIVES, the Ethiopian/german/Kenyan study project groups

Live project tries to transform the subsistence system into market oriented system. Not production like before but as a business, because this is when a producer thinks in terms of business he produces more produce for the market this is why we have agribusiness experts.

In LIVES project we are going to focus on certain commodities on their value chain development given horticulture we have just been working The idea is just we have to lift the production for the market so we need lots of support but we don't know where to start. As Casai mentioned… before just starting the project there were many studies across potential regions and areas and kind of identifying problems on those production input service supply marketing processing and other supporting services. So along that we are trying to align our intervention based on those findings. So I will focus and give you the experience of lives project of the last 3 and a half year focus on the input service supply and marketing businesses services. So we are promoting businesses along this to highly potential different making knots of the value chain in each commodity: Vegetables, fruits and specifically in those potential areas given the four regions and ten zone and 31 districts. We are basically doing two things: we support existing businesses and we establish new businesses. And basically our intervention focuses on two areas: like the business development support service and those technical and those agronomic and other practical issues are supported by those technical experts and the business support by me and others in the region. And basically what we found existing and what we are supporting are kind of business if we classify by ownership we have privates individuals owned businesses, groups and we have cooperatives and those service of inputs given by public. So we have those four different categories of business owners we found. The privates, groups, cooperatives/unions and those owned by public. As Casai mentioned the majority of input service supplies are made by public so we are trying to engage privates and groups like youth group or women - to supply or just to engage in the process of marketing. So in horticulture basically what we are dealing is in the input service supply we focus supply of new species and varieties. Those are identified by experts existing ones so we are just promoting those as a business in those localities supplied by youth or just privates or anyone engaged in this business. This makes big difference in the production and productivity – the availability of new varieties of seeds. The second one is just focus on the availability on those agrochemicals and farm equipments – those input services. We want to promote the supply in all our project areas. So here what agrochemicals Supply is like pesticides and …other monitoring and other mechanisms why the public also the supply by other privates based on the needs. The other basic intervention is based on the irrigation equipments because we are working on irrigated

areas so water pumps availability. Also if that fades they have to get the repairing /maintenance service. All these are pieces of potential business engaged by youth. We have so many youth who engage in the rearing maintenance service. Because each farmer at this time has one or two water pumps because there are credit systems available through the government so they get credits so at some point it may fail so it needs maintenance also availability of spare part??? Te other thing is water management and supply basically what we are doing is we are promoting these irrigation water associations. We promote the establishments and just issue the cebre??? (7:20) so they have to define their contribution and all to insure the maintenance and the sessenebraty??? of the water supply. So here is basically what we are promoting for the input supply so this is applicable for fruits vegetables and fodders. In marketing processing we are promoting kind of collective action focusing on raw vegetables and fruits and processes vegetables and fruits. So so many things we are interested in – the post harvest handling, kind of quality insurance and all this including transporting storage and all these mechanisms. Also in the processed vegetables which are limited using this products at the raw stage without any further process so we are just promoting some with minimal investments. Maybe you can see some production of chips now it's common without any big investments but there are other ways of using potatoes and other products. So these are the basic interventions focused to attract those youth and women and other farmers around the localities to take as a business. To ensure the sustainability we are just doing certain capacity development activities like with local responsible and mandated offices because in the promotion of this business we have mandated offices like micro wings enterprise??? Run as an office by the government, micro financing institutions, women youth and children office cooperative agency and all these are mandated offices by the government, mandated to support this business owners and creating enabling environment. So with this bureau we do a number of capacity buildings like we mentioned on the basic business skills that include major topics like how to create a business plan, how to identify market, market shortages and problems and strategies and other topics. The other is we have a platform at commodity level – like commodity specific, livestock and irrigated crop platform. In some regions we have very specific platforms like diary, vegetables… this engages to make room for all different actors to discuss problems and to know each other and to raise some voice. These platform basically owned by government, irregularly they are just attending buy all actors. So this kind of initiatives is made by our project to ensure business... and also for scaling up…

Before we move on with capacity building, let me give an example from livestock - dairy: we have been introducing these technology inputs for boosting milk production. One technology we introduced was the milking machine (small one for individual farmers) – it takes five minutes to mil a car it can be generated by electricity or biogas. Imported from India. How do you think this technology should be introduced? What people do here, including NGOs, they just donated it …and no interest to maintain it because if you give me something for free I will use it as long as it lasts because if it's not working I will just leave it because it didn't cost me anything. So what lives is doing – we introduce as a business. A group of youth in the village can buy it (it is still too costly for individual farmers its 700 dollars) so young people can buy it at can give service to the community. Another business model could be to sell it to a group of farmers; they use it for themselves and also give service to other farmers. So this sort of business development is one area where lives is working on and we want to change the input supply system. The public system is donation for free- highly subsidized – and the government cannot continue to subsidize inputs forever and even the NGOs are doing donation. There are quite a number of technologies introduced to the country – you find them rotting everywhere. It should

be through business. Only through business people care – smale scale agribusiness. Thank you Daraja???...

(Kurt) could I undermine that one – this is a philosophy – a change of philosophy from the given to creative opportunities to those who are interested. This is really a breakthrough issue. You have made your own experience with that. Thank you for mentioning that. (Dr. Casai) I think we will continue with I priority to the women.

(Woman) I want to say a few words to the knowledge management activities that we have: the knowledge management intervention is mostly unlined in support of the value chain development processes that have been mentioned earlier and also they are aimed at complementing the capacity development activities that have been mentioned by DR. Mamusha??? So with regard to that the project has a number of key interventions. So the project established nearly 40 art-culture knowledge centers almost in all project areas at the zonal and district areas. They are aimed at supporting public sectors staffs in order to be able to create store and share knowledge among themselves and in addition to that the project has tools for knowledge management interventions and this includes we organize demonstration of new technologies we have a range of field days seminars and study tours and also we have a number of other inaugurative commodity platforms all of this has been done along the value chain with different commodities that project is dealing with and the overall target is to create a space for learning and change along the actors for the art cultural development. The other thing that we do with regard to promotion which is aimed outside of the project area in order to scale out the results to other areas is using the repository sight. We have repository sight with ILRI which is the CG Space, we have all the result documents and working papers which are open access to anybody who is interested to have an access and also we run the Ethiopian agriculture portal which is a very well developed page and you can have all the agriculture resources that are important for the country. And currently we are working towards automating it we are trying to link it with the ILRI website so it will have more resources. Besides that we have a number of materials and we work with a number of stories with our own website which is the Lives.ethopia.org. So this is all I have and we brought a couple of published materials s if you are interested…

Thank you Wonlack? If you want to learn about about value chain development under smallholder system in developing countries. I think you won't be disappointed if you visit these sites. So please visit this side. Mamusha will introduce our capacity development in support of value chain development.

(Mamusha) Yes thank you. You know the advantage and disadvantages of being the last speaker. All my colleagues have mentioned here and there…so hopefully you share some minutes with me. So I mean from the descriptions given by the previous speakers we know that knowledge and skills is very important in Value chain development. I mean historically in Ethiopia our public execution system has been production focused because the objective of the country was being food self sufficient. So the whole issue was production increasing productivity and production so that much of the skills have been on production techniques. But recently Ethiopia is just moving to have some market oriented agriculture development so with this transition from subsistence agriculture to a market oriented agriculture this issue on market orientation, value chain development. All this kind of things is really really new in our country. I few take the public extension services particularly knowledge and skills is here very lucky. So much of the knowledge and skills is here on production and production range. Especially on marketing and processing and even advisory services along the value chains is not established. This project, LIVES project working with value chain development is very unique one in the sense contributing to developing ideas, developing techniques and also developing the

capacity of the public sense. So capacity development in LIVES project focuses one on the value chain actors and the other one is on the support system. So the value chain actors are the direct actors that engage in the production, processing and marketing of the given value chains so knowledge and skills is very quick and relevant along the chain. Specific and relevant skills provided. But at the same time the support system mainly the extension system. The extension system also has to be strengths than this type of skills. For the extension system we use a trinity training approach mainly on approach, value chain development approach, market oriented extension approach, knowledge management approach, Gender mainstreaming approach, a business development approach, These are just some of the basic approaches in market orientation. We give a strips? of trainings of all projects of regional and zonal levels. So the idea is once we incarnate this idea of new ideas/ concepts. Once we create critical mass of trained people in the public extent system. They are the ones who take up the project interventions. They are the ones to scale up the lessons and outcomes of the project. They are the ones who really sustain the interventions and benefits of the projects, so now on top of activity training for the public extension staff we also have / we also supports public education – masters training. So this had been in consultation with our partners so when the projects start in each intervention zone a diagnostic study was done. The stakeholders and partners are identified critical capacity needs. They need some stuff that will be trained on al long term to really take up the step up ideas. So know the project gave 100 tuition scholarships and also handled cases on support. The mainly support is from the Research System and the Tuition support is from the public exation and livestock agencies. So all of the idea is through this graduate program we have a joined supervision model where they have either a main supervisor from the university and ILRI also assigns appropriate scientists to serve as core supervisors. Through that idea we also trying to really influence the post graduate programs of all our universities to give more towards disciplinary based type of research towards a more value chain type of issues, so that graduate research students should address issues of value chain. It's not only on some some aspects. So also the purpose of these programs. It's also when they finish and the students are also employed in the different public extension system. But if they have this type of orientation that support also the project. For the actors they have mentioned the input service division, production, processing and marketing. So we train producers/farmers in processing and marketing many types of things. What is also unique in LIVES capacity development, Casai was mentioning this morning; when we talk about value chains you have to see across the chain and find out where this critical point is – you have to find that critical point. So know these training activities depend on the type of interventions that are really designed. Then for this particular type of activities (production activities, processing activities or marketing activities) then it is really important to identify specific and relevant training needs of those actors. You cannot just give a general type f training. (ca. 25) Because they produce a particular type of product for a particular type of market, there is particular standard so that you really have to meet that type of skill. So there a special training programs designed, based on a basic need assessment. We also introduce coaching and mentoring - that's most important that those producers or import service providers have to follow on. The mentoring is really very affective.

We are done from our side – do you have any further questions?

Thank you for your interesting and important task here! (Kurt)

Student: You said that still the majority of products come from smallholder farmers, right? I was wondering now that you want to transform from the subsistent to the market system, what are actually the markets for the farmers, to whom do they sell?

Student 2: Also concerning the conversion to market oriented agriculture and the problem of food security. Isn't there a high chance that farmers get food insecure, when they are just producing crops for the market? How do you think you could tackle that?

Student 3: You mentioned mentoring of actors but I was wondering how the monitoring of successes works?

Casai: well the smallholders actually sell it to brokers. Some have cooperatives, marketing groups. Some sell right on the road. Some who have the capacity bring their product to the market and sell it there. So there is no way of unique way how and where they sell. But the brokers are the major takers of the benefits. The consumer is the end buyer and the looser. The farmer is the looser. I don't know what percentage of the benefit. So for some very perishable things, the broker is there and connects the farmer with the wholesale. If they have cooperatives then they use this system.

The second question. Food security: I give you example – before there was no market orientation. Farmers sold any leftover. Market orientation means these farmers target the market. For example there is tomato and that is purely for market. In one scenario in the south, that used to be a maize, cotton and sweet potato area. And know it's almost a 100% banana producing area and that is market orientation. And they have cash and they buy their grain, wheat, teff and barley from other farmers. Yes care should be taken. Because If everyone produces banana or tomato, then there is no grain or teff anymore and that's dangerous. But until we reach that level, to be worried about there is a lot of time. Know we have a 15 m ha under production and a lot to do. But it is good that you raised that issue. Market orientation is not equal to just selling – for me it's planting for the market, and that means a farmer has to produce more, targeting the specific market. If someone is not targeting the market he is not initiated to produce more. So the development is to plan the inputs, the production to meet the market, he has to produce whenever he can sell the product on the market. He should plan the production so that the yield will not be lost because of lack of market. So many things should be balanced, also the consumption. I don't think a farmer would sell everything and starve his family – he will produce more and no reduce his consumption.

Dr. Mengistu: I understood that the approach is more focused on producer side. The whole system should work and traders should be supported. Usually we tend to blame the brokers, but they are there to play their own roles. What they need they have to be capacitated – they have to know how to deal with the product, storage transport…do you have the support for those kind of actors? Value chain supporters like credit institutions…what kind of relations do you try to create with those kinds of actors? The other thing is processing issues…in most of the cases we export for our neighboring countries. How is the value addition?

Prof. from Kenya: They are two types of market here: the local markets, because Ethiopia has different zones for fruit and vegetable production and the other is the production for export, specifically for the European market. So when you discuss on market orientation you don't distinguish for those products produced for the local and those for the European market. Because when you talked before about the Kenyan market and why it is better developed than the Ethiopian it is mainly because of the focus on the European market. There are certain standards, global standards that are applied and a certification process. I was wondering of those kind of standards are implemented here to make the export to Europe possible and how they affect the farmers. The other question is if you have tried to register all the brokers, that they don't exploit the farmers and that you help to standardize in the development of the value chain. You are able to standardize their role,

because they are kind of a link. Sometimes they don't inform the farmer and so they don't take back the money.

Dr. from Kenya: I'd like as to complement on what you talked about. We should look at the value chain concept from two perspectives. From the theoretical perspective, it was developed by Michael Porter. And value chain is about satisfying the consumer at the end. The ultimate perspective is about the price and the value for the produced product. For us to put it in practice we have to ask are we producing it efficiently. That will come in two aspects: The inbound logistics and the outbound logistics. Inbound logistics is about all the inputs: fertilizers, knowledge…how are you going to produce this product? Do we have effective transport? Do we have the necessary skills? Do we have an appropriate technologies? And this technology also can be applied in marketing. We have talked about different types of markets here. Are we able to sell these products outside the local market? I don't know if this country is a capitalistic country? Yes! In capitalistic society the government owns very little, but for socialist the government is still holding some of the things. In fact I walked around in the town and getting some services it is a little bit difficult because it is not privatized. This issue of privatizing some of these institutions will end up enhancing competitiveness. And you need to look at customer satisfaction. In Kenya…if you we talk about banana and value addition…we can make crepes or porridge, those are practical aspects of value addition.

Thank you sir for broadening the discussion at the policy level. That we call the support service of the value chain. I want to say two points – practical points. The major challenge I see in the smallholder value chain is scale. Smallholders cannot access inputs, cannot access profitable markets. I think this is the major challenge. The inputs are maybe there in the district town, but an individual farmer from the village cannot take a bus to get the important inputs. LIVES is working in this aspect, that is collective action. We advise and organize groups to access inputs at scale. If ten farmers organize themselves and access that input it will be less costly for the individual farmer. E.g. milk production is expanding – dairy development is flourishing in this country – using the Holland (crossbreds) cows even in the rural areas. But the problem is they don't access concentric, the concentric supply is in the district towns. So to access those we organize groups – just 20km from the production side. At the same time farmers have to convert their liquid milk to yoghurt and butter because they cannot sell the liquid to the town. So this access and scale are related. This is one point LIVES targets. The other things are why there is an established value chain…it is long and it is corrupted because of these brokers. The chunk of the profit goes to these brokers. In some case it is sort of mafia type. The horticulture market in Addis is controlled by few brokers/ traders. They control the price at the production side like you mentioned. That's because of mal functioning value chain. That's where we work. We are trying to give some information like Casai was saying. In Tigray to the north we apply information to the producers, link with profitable markets and genuine traders. This is what we do for input supply. The other point mentioned like export market – we are not yet there, the whole production we consume in the country. We are undernourished. There is a lot of market for fruits and vegetables and it is not yet time to access the European Market. The furthest we go is Middle East maybe. So we don't differentiate for those fruits, vegetables even milk products. We concentrate on the local market. But the local market is still huge – even for meat. For export market our target is leather. We don't consume everything here and we work on access to international market…like oil seeds, leather, and coffee of course. Those are the type of products we are trying to meet the European standards.

Kurt: Can I ask something…Livestock and Export markets especially in the gulf peninsular – a huge market. Kenya is also involved here. Creating an information flow

down to the producers on market opportunities and quality especially and establish certain processing institutions here in Ethiopia open up new challenges for exporting markets. Buying abatua???, a top class high quality abatua, slaughtering according to the Muslim rights opened a quality market to the gulf, Oman and so on. And reaching far into the villages where contractors buying up now goods from those farmers who never had access to markets. That goes together with access to markets – expectations. And that farmers know expectations of the market in terms of price and quality made a whole change even down to the pastoral areas. So in this indication what information means to fire the value chain.

Casai: Thank you I forgot that Smoruminan??? I on area we focus for the export like price, access to the abatuas…is one leverage point we also work on that.

From LIVES: Let me answer to my colleague from Aramaya – it is true that we are cursing the brokers, that's because of the damage they are causing. But otherwise: Yes they are source of information, Yes, they are source of knowledge, source of linkage. But there has been some attends actually in Arba Minch. Because they were cheating on the wing scales, when they had 500 kg they told the farmers this is only 350. And the price is low and the yield they produce. That's why I say they are bad. But I know they are very known source of linkage. Without them it had been very difficult for a farmer in a remote place to sell his products. But they are so selfish the amount of things were they try to benefit from the farmer is so high. We actually tried to engage them as actors in the value chain. These brokers they are sons of the farmers who have been cheated and we told them that and they said we are sorry hurting our families and we will act appropriate. They said so. But I didn't find out whether that is working or not. The processing issue you raised, like Dr. Salomon said we don't have the volume. You know Chiquita – it is one of the biggest companies in the world and I was engaged with them - we tried to export organic banana because there was no fertilizer applied in that. So I was trying to link. And this company even when they take the whole bananas in Arba Minch it is not sufficient for them. Chiquita as a company that can supply two banana fruits to the whole world to all of us, it is a huge company. What we produce in Arba Minch it doesn't even satisfy the own population. That is why we are also spoiled. There is not enough volume and there are no quality standards… because anything we produce there is market for.

The brokers are registered some of them but most of them are not. This is the hyenas now. They have a lot of transaction – millions of Birr. I was asking one colleague in Mercato who has a relative in the banana market and I was telling him that I was engaged in banana. You know this relative of mine became engaged in banana marketing and he became easily a millionaire. What is the reason you think? I mean I told him he is becoming a millionaire because of cheating these poor farmers. That's why the Bias of the brokers issue is in my mind. The competitiveness, the consumer satisfaction this is true, but we have not yet reached that level. I don't get bananas and mango easily. You must have seen in Addis on the market. What you have seen in Europe has no spots or marks, one or two yellow marks and it are out of the market. Here it is mostly brawest, but we don't have enough of it so it is not fair to think on this at this level because we don't have enough of it. Thank you!

One questions left from Aramaya on the participation of credit or other institutions. You mentioned the five pillars. We are working with it. We are including all the mandated offices, because we are a project – we work on it 4/5 years and after that it is a government mandate to continue and take over. So in ways of capacity and also in other activities we engage all the research basically and other mandates like credit institutions. We are promoting business a model we have no handouts – all we have to do is to give new knowledge skills and go with the system as it is. If they need some credits we engage with

them but basically there are some technical skill – to prepare the business plan and also in the credit side, what they say is that the agriculture sector is risky so they are reluctant to give credits so we also create awareness for that. So there are businesses with good revenues, like in fattening, dairy or horticulture. We have these platform meetings which happen periodically in all districts – these engage all value chain actors, including brokers. At some region they have commodity specific platform like dairy - we discuss, especially the government is the one who leads the discussion. In other region they took us to livestock platform, irrigation platform. So this way we engage all actors and find solutions.

One interesting point is related with brokers. Should brokers be abolished? You may consider this for your paper or seminar…within 100 km of Addis there is a full vegetable growing areas there are very active brokers. If you go to east Sherar??? You can see young boys riding bike – they are active brokers. They are wealthy people because they take the chunk of the profit. So there is some attempt, farmers in town they have shops and sell their products there. Another example that is bypassing the brokers from dairy: from rural areas producers are linked to dairy cafés in town. There is no actor in between. On the other hand we introduce another actor in between – youth/ women who pick up the product from the peri-urban areas and deliver the milk to the cafes in the towns. So it is sort of brokers or collectors. This concept should be researched: brokers like these collector boys or women it is also sort of job creation. On the other hand this corrupt system of value chain is denying legitimate profit for the producer and price hike for the consumer – so brokers are bad. N the other hand they also facilitate the value chain. So these things should be thought.

Student: You now already gave us an example on how to abolish the brokers and I was interested if you have other ideas and how do you feel about the system of the Ethiopian coffee exchange, where you have storage areas and you make sure that information is transparent. So in LIVES do you have other ideas how to make the whole transaction more transparent?

Student: You mentioned a major problem in the value chain is the input supply and you said for that it is important to organize groups. And we read so many reports that cooperatives in our country is not functioning. So how do you evaluate the performance of cooperatives and is there any other intervention in order to make them work more effectively and to sustain their work.

For the first question – for your research – we don't want to abolish brokers, but we want to improve the value chain through training, providing information to producers – that is our approach. For the other question: actually we are working n a number on businesses – one of them is on cooperatives. As a mandate in LIVES we are just not able to establish any cooperative but we are working with existing one and maybe we gives ideas to them how they better perform. Actually we engage with them on the management issue and give a number of basic capacities; because where they are failing it is just on management issues and also to manage some conflicts among members. Otherwise it is easy to establish informal groups in each area in marketing and trading areas we advise them. We link to the producer. Also what we did with the cooperatives in Isshoa (1:08:22)??? We have good and active cooperatives in dairy and also in other sector – maybe Meki Batu at Union level they are very active and give good lesson to others so it's kind of experience sharing we support in our intervention area, because we need them and it is kind of the business to facilitate them. It's just to think beyond…

Student: I am interested in an example about onions and I wanted to know you were telling that a few farmers went to the south for training and that production of onions grow in dairy region? How did that work and how did the farmers learn from each other?

Ja ok, the process we follow was – there was one farmer who was young and who was interested. We knew that in this area you could plant plenty of Onions, because it was very suitable. There they produce rice in the rainy season, once they removed the rice they could grow onions. There is a very huge plane. We contacted this young man and he said he wanted to raise his own onion seeds but he couldn't, so what we did was nothing we very much but we brought him to Ziway. In Ziway there are many onion farmers that are experienced in onion seed production. We only left him there, he talked he discussed and he tried to get the knowledge, he got contact, they exchanged phone numbers. We only took him for two days. He went back to his home place and started raising the onions. He bought some seeds from them. And then some other farmers saw him benefiting. And after there were two other farmers that followed him and we were also there as experts supporting them, because when you produce seed you also have to bring the bulbs from other. It is not always seed/ bulb. There are systems you have to follow. They were three, then seven and at some point they were 24 farmers producing onion. So our interest is not to increase the seed the ultimate goal of the project is to increase the volume of onion in the area. But because seed was a bottleneck we were trying to solve that. Actually they started producing access and even started selling to Tigray and other parts of the country. Because if I go with them as an expert I might not understand very well, but from farmer to farmer is better. This farmer to farmer knowledge exchange is critical to our success.

Student: And the local extension staff has they played a role?

LIVES: When we started they had no role, but when the farmer was back and started this growing we also had to train the Das. Because we are a five years project – the DAs and everyone has to know how to follow up. We left this project 2012 but it is going on. It has now been made sustainable. So the experts were engaged even though initially they were not.

Student: also concerning the input supply. You also raised the issue of new species. Who is doing that and how have they been adapted to regional climate aspects or climate change aspects.

LIVES: We don't do research. There is a lot of research on the shelve that has not been used. So we are taking this research to a wider audience. E.g. for onion there are two types of onions – Bombay red and adama red. We kind of do kind of research. And the farmer will say no the size of the Adama is larger and the market does not need the large – they prefer the medium one: so they prefer the Bombay red. But you have to explain that there a two types and you choose whatever because the market does not require the bulbed onions so they prefer the medium one the Adama red – many farmers prefer Adama Red. So we give the two species out and give explanations for that.

Student: And are those research centers in Ethiopia?

LIVES: Yes they are in Ethiopia; they are regional federal research centers. And also here there are around ten centers in this compound and universities. One interesting point on the cooperatives – there is a dilemma: it is scale problem, small-scale individual farmers cannot access inputs and markets on their own and cooperatives in some cases are not working good. A very good or bad example is in Gondar, a dairy farm with very modern machines donated by NGOs and is just a dirty place this cooperative. This is a dilemma. How to go about it?

Casai: We have been engaged in northern areas were the cooperatives work effective, we have been seeing this system. But in areas where cooperatives are not working we were trying to establish private input suppliers. Like in Kenya the cooperatives are very effective; the private suppliers in Kenya are very effective – unlike ours. So in areas where the cooperatives are very effective we use them. In others we create our own inputs, e.g. the Mango I talked about. We identify that this is suitable for mango plantations but how to get the seedlings? What we do is we group few farmers that are interested but we don't force them like in the government, like in the cooperatives to be members. There is a market there is a possibility to do this – so we raise interest. And once he knows he becomes an input supplier. So it is based on interest not on force. So there are ways.

LIVES: yes if you are going to visit Istishava you will find in Meki town there is one farmer input supplier. We linked in with one Dutch company – Alema Kudis poultry – they also produce and supply concentrate feeds for poultry. We trained him and then he established a shop in Meki town. This is one approach. In the south also we did the same. But at the larger scale – at the policy issue at the development strategy what a developing country should follow? Are they developing a private business which may not be successful in the short term, because it takes too long. There are also informal groups like the dairy production in Tigray. There is no formal cooperation.

Prof. from Kenya: I was thinking on a climate driven enterprise, in that the farming corridor from production to marketing is related to seasonality and time of production. The amount and the diseases – they can affect the crops from time to time – therefore the types of chemicals may be needed to be applied. Maybe related one to the other. I wanted maybe to learn from you on behalf of the climate group. To what extent have you seen climate variability and climate change influence the production trends are there for the business patterns in the various productions systems that you have there, e.g. livestock. Do you find that climate is a major variable that is of concern for you? Because there are risks of natural disasters…Could you give us a summary on what information who have and what adaptation ideas for the farmers. On behalf of the Gender group – who is involved on what level of production? How is land owned and how do women access land and who owns what type of business? Na when you get to the brokerage level who is involved here? And the major traders, who are they?

LIVES: That what we work on. We have a Gender expert he is not feeling well today. But we include in the presentations Gender – maybe Mamusha also can explain. We have an approach for that, they will explain. But climate- we don't work much on climate but environment is related to climate. Casai?

Casai: it is true that this coping system is climate based. We are having some difficulties this time in the sense as I have said that some parts of the country are suffering because of this climate change. The rainfall patterns have totally changed. Maybe parts are suffering of drought. The government has reported about how many millions are suffering and they need support in sense of input supply, animal feed and so on. We are vulnerable to the climate change. But one example is one insect was introduced to this country which never has been a case in this country and it must have been introduced from northern Africa, southern Europe. It's a Leave minor, a tomato leave minor. I think the name tells that it can absolutely devastate the produce. I personally associate it to the climate issue. Because some insects adapted the Europe are also adapted to the tropics. That has resulted into excessive use of pesticides. Because none of our experts nor the framers knew what to apply and where to apply. Especially the first year none of the farmers were able to save the produces. But after a while the knowledge came, the flower industry got also engaged and now we can…the rate of chemical use has highly increased because of that…because farmers really panic, because if they see an insect there without considering

the threshold, when to supply they just pump and apply. Biologically it is not so much they have to apply but they apply a lot because of that. So if you associate it to climate change we really face the consequences.

Much of this climate change is experienced in our yield time – this time. It should be very rainy this time, but we are experiencing a shortage of rain. But I should be frank with you: this climate issue it was something that deal with at LIVES??? It should at national level. And Ethiopia has a Green economy policy. As far as LIVES concerned, we tried to make every intervention environmental friendly – for that Casai is responsible – pesticides, we have biogas technology, dairy waste management, we have quite a package biogas technology to reduce the impact of dairy and also poultry on the environment. In Livestock the policy of the project has adopted the use of indigenous breeds. We have community based breeding program for small ruminants. We advocate that and we also try to improve the local breeding through selective breeding – through selecting. That is what we do on Livestock. But as I said it is a big issue. I don't dare to say that a single project can contribute to climate change you may adopt as a policy and every intervention you do should be climate friendly other is a national policy it even is a global policy issue.

Dr. Mengistu: The issue of climate we will also discuss with the ministry of environment and climate.

Dr. from Kenya: I want to make a follow up of the question on the cooperatives. If we take a scenario of Kenya there is a corporate body that regulates all the cooperatives in the country. And other than that proper training is required in the management of cooperative firms. Without that knowledge they will not survive and this is why you see them collapsing. In addition also you need to sensitize the citizens on the importance of cooperatives. Cooperatives will limit to some extent the problems of the middleman.

LIVES: and we should not forget the tragedy of the common.

Kurt: On the brokers has been a very interesting master thesis by some guys of Aramaya. But the main question her is in this country a broker does not need to be licensed. I could be a broker tomorrow. There has been a discussion with government authorities, if licensing and training along the value chain and honesty could come into the business. This is a big discussion.

LIVES: There is even now a new law – it is out now – that anybody is required to have a license to enter the market as an actor – broker/trader. Even there are capital scales to be a broker to a specific market. Even there are limits where the producer can sell his animal. I think it doesn't allow the village market. If this is applicable it is a very good rule to improve the livestock value chain. I am not sure; I have no information on the other market. Because vegetable market is a very fragmented market.

Kurt: Sorry I just like to link with Kenya…the quality insurance program aliquot all for the export crops. And small-holder participate at that one undergo all the same screening of production quality to ensure product quality. If the European market doesn't want it or the quality is too low it is dumped at the local market. And at the local market there is no quality insurance, nothing. So let's be honest there are two different worlds. The one where the supermarkets of our laws dictate what has to be done here with lots of intervention by screening and at the local market it all relies on their particular needs and the needs evolve. Supermarkets may already push for quality and create demands because the customers at supermarket have different demands. We will see this.

Prof. from Kenya: What is happening in Kenya is that there is a transformation in sticking place, with the establishment of the horticulture development directorate which is now has registered all brokers. Not only for the export market but also for the local market. If

you now go to the supermarket in Kenya they have been well sorted out and they are trying to ensure that every broker is also passing the correct information to the farmers. That is now an organization where people are organized into groups, trained on best agriculture practices. The government has created a directorate especially for this. There is also a training for technical capacity building, which go to the farmers on advice them on what we call sustainable farming systems. In a short run we may not find these things rotting at the market. We hope so.

LIVES: ok next are the gender one. One of the critical components in the project is also gender in the value chain. Just to address your questions. Maybe Ethiopia seems to be a bit different to the rest of the African countries from men and women owning the land. As I know from literature in most of the countries, women have direct control and leadership, for example in production of subsistence crops and the land probably has the specific land and just makes a decision for the commercial type of crop. But we don't have that type of thing. First there is no separate land for the women and for the man. Such as a household they have just one set of land. Both have the same access and right and we have land user right certification. So all rural people in Ethiopia they have land certification. In that land certification there is both the photo of the husband and the wife so the man cannot really rent out without the knowledge of the women or vice versa. When it comes to production this is just a collective household decision. What and when to produce and what amount. It's a collective type of thing, but for the project we have around 86 value chains. Some value chains could be more women friendly, e.g. poultry both should be trained. For example this forage seeds. We have seen that women are more active in the production of forage seeds. Especially women headed households. Otherwise e.g. in training whenever the culture allows we provide couple training, man and women together. That's for the equal understanding. It's a family business so both of them should be trained the same way. We have been asking the views of the husband in that couple training and they are really positive. If the man is away it is women and children who take care in dairy feeding, proper feeding… so they appreciate this type f training. In addition to this couple training we provide household coaching and mentoring. You can take them to a study tour to the fields or many ways but coaching and mentoring is the typical one. Because our stuff together with the DA's mentored together the household. Every member should have the idea of that training because even children take part in that. So that household coaching and some women friendly value chain improvements are critically considered to address gender issues within the project.

LIVES: The Gender issue on the business – we try to get profiles from our intervention areas giving the aid commodities we are working with. I was mentioning some commodities are more man dominated and some women dominated. But if we just see along the production, input and marketing and also accessing controlling and using we see difference among the volume and the income. If the income from that is high it look that the man is the major actor, otherwise in small volume and with commodities like poultry and small ruminants we saw female dominantly participating. The other thing is in every culture we find female at some point engaging, like in Tigray we saw female, female headed even engaged in the colony splitting. That's very tough even for men but females are saying its very good amount. Some 1000 birr one colony. Otherwise we need to analyze further our data. If we look at it now we see unproportianally female engagement – even if it's high and more income – the men are more participating otherwise female. And if is sanitary and housing the female and the children are more active. Men just look to attend the big markets.

Student: I was wondering as you said that it is only about the household and not about women or men but I was wondering is there still a big difference in men headed

households or female headed households? Isn't it more about the head of the household to get extension service for example?

LIVES: You are right in our country we have female and man headed households. If it is female headed it means she makes the decision and has access to all resources. But if you talk about a male headed household, where there is a husband and a wife, all of them have the same right and they all together have the same right. There are many examples…it is not very easy for the man to make his own decisions, because if the woman doesn't like what he plants she can bring it to a demonstration at the cabale level. But in access to resources, we have advices especially for the man and the woman. We have the women development service in the extension Agency; it is specially designed package for the women. It is designed by the ministry of women, children and all that and it is rolled down the present demonstrations. This is the mandate of the district administration to implement it. Which means women have a particular package to get engaged in income earning type of things.

LIVES: For lives our motto is gender sensitive and environmentally friendly intervention, e.g. when we plan we plan in terms of number of female headed households and male headed households. The target is 50 / 50, but unfortunately we don't have so many female headed households. So the solution is couple trainings. To maximize the participation of women. And the other approach is, where women are particularly more involved like butter and chicken we try to focus more on those. Butter is traditionally for women in Ethiopia. We are trying to introduce more techniques.

Kurt: I'm afraid we could go on tapping on so many life experiences and I think the point of exhaustion comes in, but it was extremely interesting and helpful. Thank you for that!

Interview 26

Irrigation Scheme Meki

1985 The project was established by the Koreans

Initially farmers were using this irrigation project, until the current government took power, then after that the benefits have declined. Around 700 ha are under irrigation with this project, it has a potential up to 3,000 ha though.

Because of the change of government structure, the military government was trying to expand with maximum capacity, but in between there was a transition to the current government, which was not smooth, we lost a number of things, the project stopped before reaching its maximum capacity.

The awareness of the surrounding farmers was very low, the military government had a lot of development projects without the awareness of the local people, without involving them, the benefits were not recognized as such and no one took care of the infrastructures during that time, some of the facilities were destroyed.

Some of their irrigation facilities basically were stolen, others were destroyed, farmers couldn't maintain [the irrigation scheme] by their own financial capacities, that's also a reason for the facility not being used to the full capacity.

9 motors are inside of this building, only one is functioning. Initially those 9 motor pumps were operating 3 at the time and then the next three another time, on a rotational basis. But now only 3 motors are relatively functional, only one will operate at the time pumping water into the fields. They run on electricity, the capacity of electricity is not adequate - because of power shortcuts only one motor can operate at the time, electricity comes from Meki, no it's actually from Ziway. Power limitation. Motor pumps water from the lake behind. Initially it was for smallholder farmers, now those farmers got organized in cooperatives, consisting of about 300 farmers and they're trying to rehabilitate those pumps.

Costs of running the pumps: electric costs 35 - 40,000 Birr/month, do farmers pay money for water? Farmers pay for electricity. All costs are covered by the user cooperatives.

Interview 27

09-02-15

Semi-commercial Farmer

JUMBO (male)

He is a farmer, recently started this investment operation, about 7 years ago because there is water here, the land is his own. About 3 ha. He started with a small amount and is increasing his operation step by step. He is growing tomatoes, pepper, cabbage, green beans. He also has additional 10 ha for the production of non-horticultural crops, which is not irrigable. He is facing serious problems in the market, pricing is the major problem. He has livestock production around the village, he's planning for further operations. Cattle, Sheep and goat, poultry: no fattening, only production, not specialized. Diversified production.

Farm labor: About 4 permanent employees. Peak season of operation, he employs about 40 daily laborers, women are preferred for green peas and planting onions as it requires due care. Unfortunately today there are no women working. 20-50% are female laborers, depending on the work that has to be done.

Temporary workers: 60-70 Birr/daily laborers, depending on the peak seasons, men and women are being paid the same (if they work with the same crop) of course the farmer/employer prefers women to work with green peas, if men harvest green peas they earn the same wage as women do.

Marketing problems: The price for tomatoes has improved to about 3 Birr, they will sell them, to make at least a little bit of money. He sells the tomatoes to traders from Addis, brokers from Meki fix the price with him and they sell it on to traders from Addis.

If the market is the problem, does he consider finding new markets/new crops to improve his income?! Farmer is expecting a government intervention, most of the goods are perishable and therefore their production is very risky. They hope the government will intervene and improve those risky market situations. Does he consider growing different varieties of tomatoes, or other crops?! He knows that most of the horticultural

crops are perishable and risky. (No understanding of Mengistu/the farmer that there are different degrees of perishability in horticultural crops….for example garlic could be dried and stored longer more flexible pricing) In the future they think about growing fruits, but this would be a long-term investment and very uncommon in this region.

Role of his wife in this investment and land-registry:

His operation is not investment purpose, he is a smallholder farmer. It is known how land is registered in Ethiopia - it is registered on the head of the household. For the future it is being revised, registration will consider both, the wife and the husband. The land map is prepared for both of them being registered.

Cooperative issues: They have a collaborative relationship with cooperatives, particularly for other crops, he belongs to a maize cooperative, they collect for some further marketing and the income costs may be deducted after the distribution of the dividend from the members (very unclear!) he is a member of a cooperative.

He does belong to the water cooperative we saw the day before, he has his own pump. How does he see the work of the cooperative?! It supplies water pumps, supplies seeds and professional services, they offer farming advice and advises on marketing.

He has a strong relationship with the DAs, they have a good relationship with the DAs and the government. They are being supported by them through advice on agricultural produce, management practices for different crops, types of crops to produce, market information. Also they use their farm as demonstration site for other farmers, they share their experiences.

Constraints to his work besides the pricing situation: Pesticides are very pricy, Input supplies and agrochemicals - he payed 150-200 Birr/ha, now it is more than 2000 Birr/ha. Prices of tomato seeds also increased to around 1000 Birr/ha.

They highly depend on the water pumps, they are aware of the problems and it would be disastrous if they'd stop operating. But nevertheless it is beyond their capacity to repair them. There were occasions, where all pumps stopped operating. During those times huge losses of production occurred so they are very interested into repairing the pumps to prevent further water shortages.

The climate is changing, if you go beyond this area, there are no crops, they are totally destroyed. Crop production without irrigation is a serious problem. New pests through climate change, since 2 years, pests increase and also the amount of pesticides he applied.

Has he considered producing his own seeds?

Technically they cannot reproduce those seeds, as they use hybrid seeds, the DAs are trying though. For tomatoes it is not possible, but for other crops. (Kurt: the problem is that Ethiopia is not producing it's own seeds, what we see are hybrid seeds from Israel for production under dry conditions whereas we have rainfall conditions here, which is not working well).

Investment: Operative capital is his own, he has been working on this land since 7 years, before he had nothing, he just produced crops and everything for the household consumption - now the whole working capital comes from himself.

Interview 28

09-03-15

Commercial Farm

FruVeg

Surrounding of Meki

Farm Manager

The commercial farm is owned by Mr. Sagay and around 600 workers are employed, from which 150 are permanent employees. The owner is involved in other businesses and has the manager to lead his farm. The size of the farm is 150 ha, from which 90 are under production and 10 are used for infrastructure.

The farm was founded in 1994 (Ethiopian time) and was given to the owner from the state, as an investment. That is a difference to the semi-commercial farmers, which rent land from other farmers to increase their size. Before that the farm was a state farm.

The farm produces vegetable crops and fruits. Different kinds of legumes (Green Beans, Sugar Snap, Mangitu) are produced for the export market, mainly to Holland. For the local market in Addis Ababa the farm produces lots of vegetables, like: onions, tomatoes, peppers, chilies and lettuce. The best time to grow beans is that the harvesting time is at the same time the frost in Europe starts. The farm manager tries to calculate that time and sell one kg for three US-Dollars.

The farm has an own warehouse and outlet store in Addis Ababa where traders can directly buy the farm products. There is no broker involved, because there is no need for a broker. The traders know about the high supply of products from the farm and come without the interference of a broker.

One the field we visited crop rotation is used: legumes followed by maize and vegetables in the next years.

At the farm two woman with bachelor degrees are employed, as supervisor in the back house. But not in leadership positions, in leadership positions are just men.

But 80% of the harvesting is done by woman, for peas and beans. Planting is done mechanically and the machine is operated just by men, because it is hard work. The workers have their own compound to live within the farm. Seasonally and temporary

workers can be employed up to three years and the payment is not daily based it depends on the work. The payment can be around 60-70 Birr per day. There is no rule when to move to permanent employment, the employment is based on the performance. Normally a worker is employed for three month. The farm allows a pregnancy leave for two month (one before and one after the birth of the child), but without payment.

The manager is not aware of a fluctuation in the amount of the water in the river, but has recognized less rain. But as the farm is irrigated with river water that is not an issue for the manager.

Fertilizer is mixed directly into the pumped river water and applied on the crops. The fertilizer and pesticides which are used at the commercial farm are purchased at a shop in Addis Ababa, but without a contract. A farm employee just goes to the shop whenever fertilizers or pesticides are needed and gets how much and what kind of is needed. The manager has not recognized new pests in the last years, but deals with a common pest (Thrips (Insects)).

We visit the back house of the farm, which is empty at the moment, because the fields are not harvested yet. In the back house up to 80 people can work, after harvesting the legumes. The back house is equipped with changing rooms for workers, where they can get prepared for work. The harvested beans will be packed in the first room, than brought to the pre-cooling room and at least stored in the cooling room. The pre-cooling room is warmer than the cooling room, so the packed beans can adjust in steps to the change in temperature. After that the beans will be brought to Addis Ababa in cooled trucks and exported to Europe.

The employees at the back house attend weekly training at the time they work there. The training is a demonstration of the steps they have to go through to pack the beans.

The beans which are exported to Europe are sorted out after the farm has made a contract with the buyer. Around four month in advance the price and amount is fixed, than planting starts. The products (for example: tomatoes, onions, cabbage and chili) for the market in Addis Ababa are produced throughout the year, because that is climatically possible and enough water is available. The beans with too bad quality for export purposes are sold also at the market in Addis Ababa. The vegetables with too bad quality for the market in Addis Ababa are used as animal feed.

The manager is not aware of the possibility to for example process and can tomatoes for the export market.

Employees pay half the price (for example for tomatoes: 10 Birr at the Addis market; 5 Birr at the farm) for the products produced on the farm.

Interview 29

09-03-15

Input Supplier

Meki

There were two girls working in the input shop. The shop is their father's business.

Who are their customers?

They come from different regions, farmers, smallholders and other types of farmers.

Regular customers?

Yes, but there are no agreements with them.

What range of products do you have?

They have tomato seeds, onion seeds, also fertilizers and pesticides.

Where do these products come from?

They come from abroad, Italy, Israel and Saudi-Arabia. Traders bring them to Addis. They (show owners) go to Addis and buy the products there from the traders.

Prices (selling prices only as the girls do not know the buying prices):

1 package tomatoes: 1600 Birr

1 kilo onion seeds: 700 Birr

250 gram cabbage seeds: 380 Birr

1 kilo Unisem (most bought pesticides): 140 Birr

Potassium nitrate, 25 kilo: 1100 Birr

Potassium sulphate, 25 kilo: 1100 Birr

Magnesium sulphate, 50 kilo: 900 Birr

Monomenium phosphate, 8 kilo: 380 Birr

NPR Ucan, 1 kilo: 160 Birr

Are there any price fluctuations?

Yes, prices are always flexible, also depending on customer and the amount. And they also fluctuate daily due to production costs where the inputs are produced.

How often do they buy new products?

Not fixed, distribution is always a problem in Addis. Sometimes it is very difficult to get certain products.

What is the main source of their products?

There are different source of inputs, you can't get everything at one source, therefore they drive through Addis to search for different traders to get their products.

Do they have a farm?

Yes, they produce onions, tomatoes and pepper for the market.

Do they have any other businesses?

No

How big is their land?

The girls couldn't answer.

Household size?

8 (parents, 6 children)

When did they start the business?

First they had the farm, and around 10 years ago they also started the shop.

Are they member of a cooperative of of the union?

No, union supplies inputs, different inputs then they supply in their shop. They provide many (more) different types of inputs.

How do they decide on which products to sell? Do farmers request certain products?

First they search online for improved products. Then they try to find it. Also customers request inputs themselves.

If the father retires, will they (the girls) take over the shop?

They work in the shop because there is nothing else to do in this season. The father teaches the children on how to do the business. They have two brothers, small children, still go to school.

Do they have any transport costs?

They transport the products themselves (they have a vehicle), so they don't pay other people for the transport.

Observations:

Looks like there are no contracts with traders in Addis. Probably some products or seeds are sold out, difficult to get. Looks like there are shortages of some inputs.

Interview 30

09-04-15

Extension services

Development Agent Kalli Mikesso

The extension services center provides technical support for farmers in three different "areas": plant science, natural resource management and animal science.

They implement trainings in the center giving technical support for the farmers about chemicals and pesticides. They also do support farmers in diversify their production by cropping several sorts and give trainings with regard to improved varieties. Some training techniques are for example by videos and films, demonstrations sites, workshops etc.

The extension service center mentions the existence of a cropping calendar, which gives information about planting seasons for different crop types. The calendar should also show how much of a specific crop can be purchased best at the market at a specific time (but they failed to show the calendar to us). Farmers do not follow the cropping calendar, because only few farmers are innovative and stick to this calendar. Most of the farmers plant as they are used to, as the calendar advises them to produce certain crops also outside of the rainy season. It may seem too risky to them and this is very difficult for farmers who can't access water.

Although they offer training about water stress issues, they have observed that not many farmers follow their advice. The farmers for which they offer their services live far away (i.e. more than 7 sqkm), too far away from irrigation schemes and cannot apply methods due to water shortage, which means application would be too risky; therefore they do not accept recommendations by DA and do not apply cropping scheme; moreover there are various problem in the canals. The communication between the extension services center and the farmer starts with that a Development Agent visits a farmer on his farm. Rarely a farmer comes to ask for advice and get in contact with the extension services center.

The cooperative has scheduled two meetings per month for farmers and Development Agents. There are over 770 members and each meeting is led by one Development Agent. Topics in the meetings are: production, management and product quality.

Education of the development agents

The training to become a Development Agent can be a summer program. He says the training in the summer program helped him to fulfill his duties, but is still lacking in some parts (missing focus training). They did not obtain their diplomas for the summer course at the University of Haramaya as the education was sponsored from the region – the regional government asked the university to hold the diplomas, so that the DAs would have to work for a certain amount of years in that particular region. Not having the diplomas would prevent them from applying for jobs elsewhere.

The gap between the things taught in University and the problems in reality the Development Agents see themselves confronted with, is big and they try to close the gap with individual efforts. Between the extension services center and the MELKASA AGRICULTURAL RESEARCH CENTRE (MARC – supervised by the Ethiopian

Institute of Agricultural Research (EIAR)) and college is an information flow about new technologies.

There are around 10 female and 90 male extension workers. There are around 109 female-headed households in the region. The DAs assist them with their small-scale vegetable production through improved seeds or advice on how to increase the shelf-life of tomatoes.

The food security is good in this region because the area is suitable for agricultural production. Nevertheless the number of farmers increases: they compete for land and water.

To increase the productivity a farmer cannot rent more land from the state, only from other farmers. Ethiopian farmers are allowed to rent their land to other Ethiopian farmers without the involvement of the Kebele, but if foreign investors want to rent land they need the permission of the Kebele. For example: some Dutch investors were interested in renting parts of this area, but the compensation required from the Kebele/the farmers requested was too high and they shifted to other areas.

Asked about the problems with price fluctuation and market risks, the Development Agents say that a crop calendar could be a solution. Processing would also be a solution, but so far neither cropping calendar is followed nor processing opportunities are available. DAs also promote diversification to spread the risk, but most farmers stick to one crop. (100-200 trucks with tomatoes a day: farmers only grow tomatoes, the prices are low, so next year the majority will grow something else, tomato prices will rise again) Structural problems: government intervention needed, market information system should be secured by a market authority

The role of the brokers is just the simple task to provide price information for the products . There are licenses for traders, but it just started ("The licensing of criminals just started."). With this background, "how can we(as DAs) operate?" There were several attempt to intervene themselves, e.g. own warehouse in Addis, but they could not compete due to oppression.

Only a limited number of farmers are using and have access to telecommunication, though cell phones are not used very often, neither television nor radio.

Basic equipment of the training is education about motor and power saving steps, about the dependency of crops and seasons. The most frequent questions asked by farmers are questions about inputs supplies like seeds and fertilizer.

Females are less involved in the training because their willingness to participate in mixed-trainings is lower. They do have bigger time constraints than men and therefore attempts to integrate women usually fail. Women are rather interested in trainings about nutrition, cooking or fuel-saving stoves. The DAs cooperate with "Health DAs" to trick women into participating at agricultural trainings. Sometimes they announce trainings about nutrition explicitly targeted to women and then they also train the women on the latest farming techniques. Usually women do not see farming as their responsibility/something that belongs to their sphere in the household/Men see it as their responsibility to go to the agricultural trainings whereas women are not even really considered playing an important role in farming as well.

Interview 31

09-03-15

Input Supplier

Meki

There is a young man working in the shop. He is not the owner, but an employee.

What kind of products do you sell?

Insecticides, fungicides (mainly in summer), bactericides, equipment for applying chemicals (e.g. sprayer), seeds (e.g. onion, tomato)

Where do you buy the products? Where are they from?

Bought at Piazza Market in Addis.

Tomato seeds (Galila) and onion seeds (Neptune) come from Israel (company: Hazera Genetics), but they also sell local onion seeds (Bomb Red) (bought from farmers from the Meki area)

Prices?

He does not know about buying price, so prices are selling prices.

Tomato (Galila): 1600 Birr/1 package which contains 2000 seeds (4 packages needed for 1ha)

Onion (Bomb Red, local seeds): 600 Birr/1kg (12kg needed for 1ha)

Onion (Neptune, from Israel): 3000 Birr/1kg

Cabbage: 85 Birr/package (5 packages needed for 1ha)

Ampligo (Syngenta) – pesticide: 1100 Birr / package (250ml) (300 ml needed for 1ha) – product mainly used for tomato production

Small discount possible if one buys a dozen

Prices and demand?

Prices are increasing, partly due to inflation. As pests and diseases increasingly affect farmers, the demand for chemicals is increasing. They (the input shop) sell more from year to year.

Who are your customers?

It is mainly smallholder farmers. Investors buy in bulk.

What happens if smallholder farmers are not solvent?

They offer a kind of "credit". If farmers cannot pay now, they can get the product now but pay after the harvest. No interest rate for this kind of credit (it would be illegal). They have a book where they register names and amounts. They offer it to attract customers.

Who else is working in this shop? Salary? Working conditions?

There are two male sellers. Salary: 800 Birr/month. They are working 6 days a week. There is no kind of profit sharing for the employees.

Interview 32

08-22-15

Ministry of Environment and Forestry (MEF)

Fantahun Gezie

National Responses to Environmental Problems and Climate Change in Ethiopia

Ethiopia´s Rationale/ Basis for the activities to be practiced in the country in relation to climate change and environmental aspects

Constitution of the country itself: environmental related articles

1. Right to development § 43 (supreme law of the country; nationals have to right to improve and sustainable development; national and international agreements shall be protected)
2. Environmental rights §44 (all persons have to right to a clean and healthy environment
3. Environmental objectives §92 (how far the country is committed to work, sustainability of development; no more business as usual, no more as such simply as growing without considering environmental issues)

Environmental policies (designed and launched by 1989; overall environmental goal is there, and objectives as well; sustainable development, meeting the needs of current generations without compromising future generations to meet their own needs; specific objectives are ensuring essential ecological process, live-support systems are sustained, biological diversity is preserved and use of renewable natural resources)

This shows the commitment of the country and the government with regard to climate change as a global issues and environmental issues.

In terms of **sectoral and cross-sectoral issues**, environmental policies are included: husbandry and sustainably agriculture, forestry, genetics, water sources and energy sources etc.

Proclamations

- Industrial Pollution Control
- Environmental Impact Assessment (EIA)
- Solid waste management etc.

Intended Nationally Determined Contribution (INDC)

(Submitted by July 2015)

Ethiopia intends to limit its net greenhouse gas (GHG) emissions in 2030 to 145 Mt CO2e or lower. This would constitute a 255 MtCO2e reduction from the projected 'business-as-usual' (BAU) emissions in 2030 or a 64% reduction from the BAU scenario in 2030. Ethiopia also intends to undertake adaptation initiatives to reduce the vulnerability of its population, environment and economy to the adverse effects of climate change, based on its Climate Resilient Green Economy Strategy (CRGE). The CRGE is Ethiopia's strategy for addressing both climate change adaptation and mitigation objectives. The implementation of the CRGE would ensure a resilient economic development pathway while decreasing per capita emissions by 64% or more. The CRGE is also integrated into the Second Growth and Transformation Plan (the national development plan). In the long term, Ethiopia intends to achieve its vision of becoming carbon-neutral, with the mid-term goal of attaining middle-income status.

Ethiopia National Programme of Action (NAPA)

The National Adaptation Programme of Action on Climate Change (NAPA) was formulated by the Government of Ethiopia in 2007 to enable the effective identification of national climate change vulnerabilities and adaptation needs, as part of the process of the United Nations Framework Convention on Climate Change (UNFCCC) for Least Developed Countries (LDCs). The NAPA has been updated with the 'Ethiopian Programme of Adaptation on Climate Change' (EPACC), but nonetheless contains important building blocks for the current climate change policy and REDD+ programme.

Key Vulnerabilities are Agriculture/Food Security, Water Resources, Public Health, Terrestrial Ecosystems, Wildlife, and Biodiversity.

They are currently working on NAPs. Till now, no African country has finished it, but most of the local countries are working on it to submit it to UNFCCC.

Ethiopia's Programme of Adaptation on Climate Change (EPACC)

Ethiopia's Programme of Adaptation on Climate Change (EPACC) updates and replaces Ethiopia's National Adaptation Programme of Action (NAPA), which was formulated in 2007. EPACC is a programme of action to build a climate resilient green economy through support for adaptation at the sectoral, regional, and community levels. It was initiated by the Government to update the NAPA with a more participatory approach at the grassroots level. For example, the programme will reach from the federal level down to the village level where local communities will be responsible for developing their own work programmes and by-laws to ensure climate resilience.

The objective of EPACC is "to contribute to the elimination of poverty and to lay the foundation for a climate resilient path towards sustainable development". In order to achieve this, the programme lays out 29 components. EPACC also aims to mainstream climate change throughout government sectors by ensuring climate change is embedded within government policies and plans through Sectoral Climate Programmes and Action Plans. EPACC is closely interlinked with the Climate Resilient Green Economy (CRGE) Strategy.

Climate resilient green economy (CRGE)

The Government of Ethiopia has developed a Climate- Resilient Green Economy (CRGE) strategy. (Since 2011; core concept using currently; striving for implementation)

Ethiopia is experiencing the effects of climate change. Besides the direct effects such as an increase in average temperature or a change in rainfall patterns, climate change also presents the necessity and opportunity to switch to a new, sustainable development model. The Government of the Federal Democratic Republic of Ethiopia has therefore initiated the Climate-Resilient Green Economy (CRGE) initiative to protect the country from the adverse effects of climate change and to build a green economy that will help realise its ambition of reaching middle income status before 2025.

Since February 2011, the CRGE initiative, under the leadership of the Prime Minister's Office, the Environmental Protection Authority, and the Ethiopian Development Research Institute, has been developing a strategy to build a green economy. Seven sectoral teams involving more than 50 experts from more than 20 leading government institutions have been driving the initiative. The objective is to identify green economy opportunities that could help Ethiopia reach its ambitious growth targets while keeping greenhouse gas emissions low. The government intends to attract development partners to help implement this new and sustainable growth model

With Ethiopia's action plan to create a green economy, they are starting to put in place the building blocks necessary to implement its green economy initiative. The government has developed an action plan to set up a permanent financial mechanism, initiate the stakeholder engagement process, and set priorities for implementation of initiatives. Four initiatives have been selected for fast-track implementation: attracting the investment required to exploit hydropower potential; promoting advanced rural cooking technologies on a large scale; improving the efficiency of the livestock value chain; and Reducing Emissions from Deforestation and Forest Degradation (REDD).

The government is using significant resources to build and implement its green economy, but to capture the full potential of the plan, it welcomes the partnership with bilateral and multilateral development partners as well as contributions by the private sector.

Ethiopia aims to achieve middle-income status by 2025 while developing a green economy. Following the conventional development path would, among other adverse effects, result in a sharp increase in GHG emissions and unsustainable use of natural resources. To avoid such negative effects, the government has developed a strategy to build a green economy. It is now starting to transform the strategy into action and welcomes collaboration with domestic and international partners.

The vision: Achieve middle-income status by 2025 in a climate-resilient green economy

Both the government and the International Monetary Fund expect Ethiopia's economy to continue as one of the world's fastest growing over the coming years. Building on its positive recent development record, Ethiopia intends to reach middle-income status before 2025. As set forth in the Growth and Transformation Plan (GTP), reaching this goal will require boosting agricultural productivity, strengthening the industrial base, and fostering export growth.

As a responsible member of the world, Ethiopia is also aware of the important role that developing countries play in fighting climate change, and has consequently taken on a constructive role in international climate negotiations. Ethiopia's ambition to become a "green economy front-runner" is an expression of its potential for and belief in a sustainable model of growth.

The challenge: To achieve economic development goals in a sustainable way

If Ethiopia were to pursue a conventional economic development path to achieve its ambitious targets, the resulting negative environmental impacts would follow the patterns observed all around the globe. Under current practices, greenhouse gas (GHG) emissions would more than double from 150 Mt CO2e in 2010 to 400 Mt CO2e in 2030. Its development path could also face resource constraints: for example, it could reach the carrying capacity for cattle. Furthermore, it could lock its economy into outdated technologies. A conventional development path could also be financially challenging. For example, a significant share of GDP might need to be spent on fuel imports, putting pressure on foreign currency reserves. Finally, according to the GTP, more than USD 50 billion will be needed over the coming five years for infrastructure development. More than 50% will have to be in foreign currency. Current and projected domestic savings and foreign direct investments, grants, and transfers will not be sufficient to finance these investments, leading to a significant finance gap.

The plan: To follow a green growth path that fosters development and Sustainability

The Climate-Resilient Green Economy (CRGE) initiative follows a sectoral approach and has so far identified and prioritised more than 60 initiatives, which could help the country achieve its development goals while limiting 2030 GHG emissions to around today's 150 Mt CO2e – around 250 Mt CO2e less than estimated under a conventional development path. The green economy plan is based on four pillars:

1. Improving crop and livestock production practices for higher food security and farmer income while reducing emissions
2. Protecting and re-establishing forests for their economic and ecosystem services, including as carbon stocks
3. Expanding electricity generation from renewable sources of energy for domestic and regional markets
4. Leapfrogging to modern and energy-efficient technologies in transport, industrial sectors, and buildings.

For more than 80% of the abatement potential, abatement costs are less than USD 15 per t CO2e.1 Many of the initiatives offer positive returns on investments, thus directly promoting economic growth and creating additional jobs with high value added.

Building the green economy requires an estimated total expenditure of around USD 150 billion over the next 20 years. By developing a green economy, we could exchange GHG emissions abatement for climate finance to fund some of the required investment.

Implementing the initiatives would also offer important co-benefits. For example, it would improve public health, through better air and water quality, and would promote rural economic development by increasing soil fertility and food security.

Since the development of the CRGE Strategy in 2011, Ethiopia's Environmental Protection Agency (EPA) has made further progress in translating the goals of the strategy into actionable plans in the form of the **Sectoral Reduction Mechanism** (SRM). The primary objective of this project is to build capacity within the EPA to deliver its SRM programme. Focus areas of support are knowledge management, climate finance, and **monitoring, reporting and valuation** (MRV).

More specifically, this project will:

- Enhance capacity across various government ministries to develop systems to attract, leverage and distribute climate finance. This will include the identification of funding sources and leveraging of finance for CRGE.

- Support the EPA to establish MRV systems to track implementation of CRGE initiatives in line with UNFCCC requirements.
- Support the EPA in raising public awareness on the SRM process through publications and a web-based knowledge-sharing platform.
- The SRM responds to the need for new and additional finance that Ethiopia requires in order to realise its CRGE targets. It sets out to avoid a fragmented, project- focused approach in implementing the CRGE by developing a programmatic, longer- term approach for implementation.

Conventional economic development would more than double GHG emissions

Ethiopia's contribution to GHG emissions is very low on a global scale. However, the projected environmental impact of conventional economic development in Ethiopia risks following the pattern observed around the globe. If current practices prevail, GHG emissions in Ethiopia will more than double from 150 Mt CO2e to 400 Mt CO2e in 2030. On a per capita basis, emissions are set to increase by more than 50% to 3.0 t CO2e – and will thus exceed the global target to keep per capita emissions between 1 t and 2 t per capita in order to limit the negative effects on climate change.

Current level and sectoral breakdown of emissions

Ethiopia's current contribution to the global increase in GHG emissions since the industrial revolution has been practically negligible. Even after years of rapid economic expansion, today's per capita emissions of less than 2 t CO2e are modest compared with the more than 10 t per capita on average in the EU and more than 20 t per capita in the US and Australia. Overall, Ethiopia's total emissions of around 150 Mt CO2e represent less than 0.3% of global emissions.

Of the 150 Mt CO2e in 2010, more than 85% of GHG emissions came from the agricultural and forestry sectors. They are followed by power, transport, industry and buildings, which contributed 3% each.

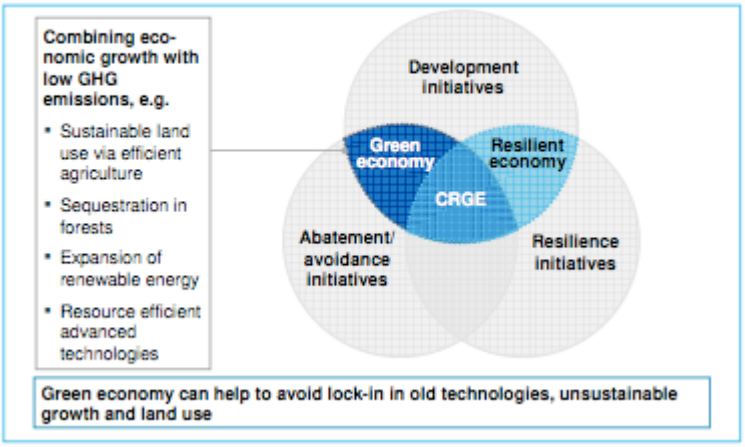
The development of a green economy will be based on four pillars

The CRGE initiative follows a sectoral approach and aims at overcoming the challenges of developing a green economy. This strategy focuses on four pillars that will support Ethiopia's developing green economy:

- Adoption of agricultural and land use efficiency measures
- Increased GHG sequestration in forestry, i.e., protecting and reestablishing forests for their economic and ecosystem services including as carbon stocks
- Deployment of renewable and clean power generation
- Use of appropriate advanced technologies in industry, transport, and buildings.

Establishing these pillars within the relevant parts of the economic development plan will prevent the economy from being locked into an unsustainable pathway and can help to attract the investment required for their development.

Developing a green economy requires the integration of economic development and GHG abatement/avoidance



For an initiative to be retained as a 'prioritised measure' within the green economy plan, the following criteria had to be met:

- Pass an initial assessment of relevance and feasibility to be implemented in the local context,
- Enable a positive contribution to reaching the targets of the GTP,
- Provide significant abatement potential at reasonable cost for the respective sectors.

Ethiopia's green economy offers GHG abatement potential of 250 Mt to the global community

The priority initiatives that form the foundation of the green economy concept could help to curb the increase in the global emissions projected in the BAU scenario. While contributing to reaching economic and social development targets, we have the domestic potential to contribute to the global effort by abating around 250 Mt CO2e in 2030 as compared to conventional development practices – this equals a decrease in GHG emissions of up to 64% compared to BAU in 2030.4 Given the projected population growth, emissions on a per capita basis would decrease from 1.8 t of CO2e to 1.1 – a decrease of around 35% – while multiplying GDP per capita from USD 380 to more than USD 1,800.

Ethiopia and the global community have finite human, technological, and financial resources. The CRGE strategy must make choices about the levers not only to capture a large share of the abatement potential but also to boost economic and social development at the same time.

Two sectors – agriculture and forestry – should receive particular attention: they contribute around 45% and 25% respectively to projected GHG emission levels under business-as-usual assumptions and together account for around 80% of the total abatement potential.

Green economy will unlock economic growth, create employment, and provide additional socio-economic benefits

Building a green economy requires more than USD 150 billion over 20 years, but provides access to climate finance

"***We are not alone!"***

A funding pool of at least USD 20 billion annually should be obtained from various climate finance schemes set up to foster the green economy initiatives of developing countries like Ethiopia (Figure 16). These funds are typically available only for initiatives that reduce GHG emissions, i.e., only if the receiving party proves reduced GHG emissions as compared with BAU development. In the short term, support from climate finance can take the following forms:

- Bi-/multilateral grants primarily for project setup, capacity building, technology development, and dissemination
- Bi-/multilateral pay-for-performance deals, i.e., payments linked to verified GHG abatement
- Trading schemes or offset markets, i.e., emission reduction, for example resulting from Clean Development Mechanisms (CDMs), sold to companies (in ETS) or committed countries (cap and trade) or via voluntary carbon markets.

MoFED

The MoFED, in collaboration with the EPA, will solicit financial support from international sources and channel the available funds in the form of advance support or ex-post payment. The MoFED will ensure transparency, objectivity, consistency, and professionalism in its operations in compliance with international agreements. The UNDP has offered its support in establishing a Multi-Donor Trust Fund within this ministry through which funds could be channelled. The government will eventually fully and independently run the facility – regardless of the concrete organisational design.

Stakeholder mobilisation

To kick-start implementation and build widespread awareness and support, the initiative has conducted and will continue to conduct extensive stakeholder consultation.

Around 300 stakeholders have already been identified and consulted by the STCs. Consultation was conducted under the co-responsibility of the STCs/ ministries and the EPA between July and September 2011 and primarily focused on governmental and public stakeholders.

Funding

To implement green economy initiatives, the government will commit the country's own funds, but it will be also necessary to gain support of international private and public partners. The CRGE initiative will therefore systematically engage in discussions with targeted development partners. This also requires establishing the appropriate funding mechanisms for receiving and distributing funds.

MRV and benefit sharing

We will develop the enablers required to monetise carbon credits. This includes primarily the setup of appropriate measuring, reporting, and verification (MRV) systems, which are needed to provide proof of GHG abatement. It also includes a definition of benefit sharing, i.e., specification of the stakeholders who will benefit from the proceedings of the sale of carbon credits.

Checklist and Guidelines

Any initiative or activity must follow this environmental framework safeguarding principles. Project may have adverse effects on environment and society. The goal of the framework is to reduce the impact.

There is the GDP (Growth Transformation Program). There will be launched GTP 2. Every sector and line ministers has to consider and include climate change aspects. It is mandatory to follow checklists and guidelines already prepared and distributed.

Content/ graphics of the presentation:
http://www4.unfccc.int/submissions/INDC/Published%20Documents/Ethiopia/1/INDC-Ethiopia-100615.pdf

Discussion:

Are there problems of management and coordination between the ministries and governmental departments? What is the function of MEF?

- MEF is supporting and monitoring the work of others ministries. Six ministries were selected for the implementation of these environmental issues and policies
- MEF is the one that is coordinating, monitoring and supporting the implementation activities of the other ministries.

There is overexploitation of natural resources. Are there soil protection measures promoted by the MEF?

- MEF supports three main measures with regard to agriculture activities and soil protection: 1) enhancing production and productivity, 2) increasing the livelihood of the farmers and society, and 3) focusing on reducing GHG emissions. With these 3 measures they are striving to reach the target that they seek within their policies.
- There are supported and promoted soil protection measures by MEF and other ministries, various improved structures e.g. applying zero/ minimum tillage (soil aspect), water management system with regard to sustainable irrigation schemes, nutrient and crop management activities and more.

With regard to EPACC, are there any specific actions for smallholder farmers?

- There is the promotion of the mechanization system for smallholder farmers, especially with regard to tillage methods and machinery for improving productivity of their land.
- As well as to reduce livestock GHG emissions by wastewater management systems that are often currently liquid waste systems that have high GHG; but they are working on this. MEF is following and coordinating these activities in river basin areas.
- Ethiopia is still in the first steps of Climate Change Activities. There are problem in terms of human capacity, finance, technique etc. They are not working at 100%, but they are trying to do so with the resources they have. They are not fulfilling everything, but they are continuing to try as much as possible working for a better state of these activities.
- Monitoring schemes are based on the programs mentioned before. Every program has to follow these established frameworks and documents. Listed values have to be followed by everyone.

Which are the main challenges of climate change in the area of agriculture especially with regard to fresh vegetables?

- There is a duty and responsibility given by the proclamations. They are faced by challenges. There are e.g. problems with regard to technical issues and development of finance issues of facility. (as well, forest issue by proclamation)

- Main challenges are obvious, as Ethiopia is a developing country. That is for example constraints in terms of human capacity and manpower, financial aspects and technological aspect (innovations) produced locally or importing if possible of environmental-friendly technology.

Concerning water quality and solid/ liquid waste in problematic areas of vegetable production and irrigated land, also with regard to heavy metal production, is there any action by MEF?

-
- Other ministries are working on that, e.g. Ministry of Water and Energy working on crops and soil with regard to GHG emissions. They are for example engaged in renewable energy (solar energy) within the GTP.

Intensification/ mechanization is one way of create effectiveness and productivity. What does that means to the sectors? Way to improve the livelihood; but on large-scale mining Ethiopian land (FDI), what consequences?

- FDI bears opportunities and job creation for Ethiopia and its society. It is important for the economy

What is the country doing with regard to waste recycling?

- Dumping sites; Waste is a resource. We can make energy out of it. The country is working on that.
- Climate Change does affect Ethiopian Agriculture due to changing rainfall pattern. Ethiopian university are working on this topic and are conducting research.
- There is no focus on extensive farming; Promotion of organic/ natural fertilizers and no synthetics.

Why do you focus so extremely on reduction of GHG emissions as developing country?

- They want to grow economically as well as environmentally friendly with the help of Green Economy
- They have to consider Nature and Natural Resources in order to not become the case like China (being poor in history, growing enormously, but to the burden of nature).

Comment Kurt: After having worked in Ethiopia for 40 years, there is something going on. There are wise policies on the way. They are right on this course.

Observation: Extreme focus on the reduction of GHG emissions, even though that should not be the first target to seek for as a developing country. May be caused by the pressure of international donors and financial supporters.

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Interview 33

09-03-15

Labor Market

Farm Worker No.1

Male, Name: Shapi Jamal, from Southern Nation Alawa

When did he come to Meki?

He came 4 years ago

Does he have a Family in Alawa region, and if yes what is the size of the household?

He has no Family but is single. He came to Meki region to work on farms, as there are different vegetables grown in Meki region, and many farmers need daily laborers for different jobs on the farm.

Where did he learn to do farm work? Did he have his own farm in Alawa?

He is mostly planting the onion, a job mostly done by women. Also he is doing some pruning, weeding and harvesting of tomatoes.

Where did he learn to do this work?

He didn't know how to do any farm work before he came to Meki region and learned it on the field by family members and friends already working in the region. Before that he didn't handle any vegetables.

How long does it take to find employment on the labor market and for how long is he then usually employed for?

Usually farmers employ for the next day. His relatives are helping him in performing farming activities as he tries to get better from day to day. Employment time is always one day.

The farmers bargain the price of tomato with the brokers first, then come to the labor market to find work force for the harvesting. Work doesn't start before farmers and brokers have agreed on a price for the products.

What is the usual salary for a day of work?

They were paid 70/day but due to recent price fluctuation for tomatoes they are only paying 60B/day.

Does he always finds a job on the market?

No, sometimes they don't get a job. Some weeks they can only work 3 days in a week.

Where is he living in Meki?

He is renting a flat in Meki town. All costs for daily living are covered by farm work. The money they get from the farm work is enough for daily expenses if one is not addicted to alcohol or any other drugs.

Can he save some of the money he earns?

He is saving money through an Ikub-system with some friends/acquaintances.

Does he have any business idea with the money he is saving?

Yes, he would like to open a Tea/Coffee-house in Meki. He already tried to open a Tee/Coffee-house which wasn't successful and he also tried to open a bakery/bread shop which wasn't successful either. After the bot businesses didn't went well he returned to work on farms as a daily laborer. He is not able to open another business as he hasn't got sufficient funds at the moment. But in the future he wants to try again.

Is he often employed by the same farmers, as they know him?

Mostly it's different farmers every day and not the same. There is not any contractual agreement between the farmer and the worker.

Does he think the labor market is working well? Does he have any ideas for improvements?

He says, that being a daily laborer is a good job, if the people have the ability to save money. There was a time when he could make up to 125B/day on the fields. A main problem is that the workers are not paid directly by the farmer but through a coordinator/foreman who gets the money from the farmer and then redistributes it to the daily workers. Sometimes the foremen are not paying them at all or just partly.

Would he rather work with a contract or stay a daily laborer?

He thinks, that the government should intervene to stop thieving by the coordinator on the field. He sees it as a government issue to tackle this problem and to give some way of contract or agreement for daily workers. He thinks, that if the government would facilitate such official agreements, being a daily laborer would be a good job. There male and female daily laborers who come from areas far away. His wife is also a daily laborer and works on the field with him, when possible.

But there is no female workers on this market?

There is another part of the market for female workers.

Farm worker No. 2

Female, 28 years old, single

Is she living in Maki of Ziway region?

Yes she is living im Maki.

Is she from here?

No, she is from Southern Nation Walliata.

Why did she leave the Southern Nation?

To find work in this region.

Did she go to school and for how long.

No, she just had informal education.

How does the labor market work, is it difficult to find work?

She says it is possible to find a job.

Every day?

Yes, every day.

How much is she paid usually?

It depends on the type of work. She can earn from 50-100B/day.

What kind of work does she usually do?

Harvesting the green beans and transplanting the onions. Sometimes she is harvesting also green peppers which she considers to be a better job as it is easier. She prefers that kind of work. Green beans is more difficult, as it needs to be handled with more care.

Is there a broker involved or how does she get in contact with the farmers?

A forworker of the farmer comes to the market and picks one of the most skill full ladies and advises her to pick 20 more workers that she thinks are the best.

Are there conflicts between the representatives and the daily laborers? For example that their wage is not paid?

They usually start in the morning at 10 am and work at 4 pm. After 4pm should be ready to loaded on the trucks. Before 10am they can't enter the field as the there is still dew on the leaves which needs to be dried before the work starts.

What is most difficult for her or is there problems sometimes, that the agreed wage isn't paid?

Most difficult job for her is the green beans as it has to be handled with a lot of care. The foreworker forces them to work very careful. There is no problem concerning the payment. When they agreed on a wage in the morning the farmer pays them this amount of money. With green beans there is the problem, that they blame the field workers is

the quality of products is lower. Most farmers then don't employ these field workers again, because the claim, that they work poorly.

What are her plans and dreams for the future?

She says that her faith is in the hand of god, but she would like to change to a better line of work. If that is not possible she will stick with job and try to improve her life.

So, what is a better job for her?

Sh was working in Addis as a kitchen worker in a Hotel but she left that work for health reasons, but if her health improves she will try to get back into that line of work. She would also like to work as a housekeeper but at the moment it is impossible for her to work in that line of work.

Is she able to save some money from the money she earns?

No, there is no money that she can save, but she has to spend everything for daily expenses as rent and for consumption and other social duties.

How much does she pay for rent?

200B/week

How much does she spent on food in a month?

She can't tell the exact figure but she can't satisfy her consumption.

Are there sometimes troubles with the men on the market and is there a competition between male and female workers on the market?

There is no competition, as male and female workers are used for different tasks.

Does she feel afraid or worried as there are many men around? Does she feel comfortable at this place?

No, she doesn't have any problems with that as she is a strong woman and can defend herself.

What if something happens to her on the farm during work?

That is her own problem, there is no kind of insurance.

Do the women here stand together if there is a problem, do they help each other?

Yes, they cooperate when there is much pressure. So if for example the farmer refuses to pay them, they go to the police together and protest.

Interview 34

09-03-15

Road Sellers

IG Group

Interviewer: Esther, Gerlinde, Nora, Allem, Faye, Shishay, Allele

1st Interview [female with children sorting onions in a small open-booth by the roadside]

Q: where does she get the onions from?

A: she is a farmer, onions from their own farm and neighbors.

Q: Size of the farm?

A: 0.5ha irrigated, 2ha rain-fed farming

Q: vegetable crops cultivated?

A: 0.25ha onion, 0.25ha cabbage.

Q: where does she purchase the tomato?

A: bought tomato in order to sell it

Q: prices?

A: farm-gate price offered by traders was 3 birr/kg but she refused; selling price on the road side: 6 birr/kg (this information refers to her last harvest; at present she is not selling her own harvest but that of neighbours)

Q: agreement with other farmers?

A: she receives onions without payment, payment upon selling to others, at the moment all onions are bought

A: buying price from neighbor is 11 birr/kg, selling at:

best quality: 13 birr/kg, good quality: 12 birr/kg and low quality: 6 birr/kg; but the price differs according to quality

Q: other sources of income?

A: livestock production: 15 sheep, 3 oxen, 2 cows, 1 donkey. Cows for own consumption, oxen for working the land, sheep to be sold (reproduction)

Q: rainfed vs. irrigated cultivation? Coop-member? [Rainfed crops?]

A: maize & cereals are rainfed, yes she is a member of a coop. called Bulu Coop (mixed), for vegetable selling and marketing purposes

Q: household information=

A: female-headed household (she is the head)

Q: onion seeds local or imported from elsewhere?

A: local onion seeds bought from a shop [not the coop]

Q: what is she doing now? Process?

A: she bought the onions for 11 birr/kg (same price for all)

sold at 12birr/kg (good), 6birr/kg (poor quality) and 13birr/kg (best quality); [she is sorting onions during the interview]

Q:?

A: no fixed clients/customers, sells to everybody stopping by.

Q: for how long does she keep the onions?

A: these onions were bought 6 days ago, it was 15 quintals (= 15x100kg)

It may be sold within a week, 2 weeks or up to one month, depending on the market. The quality is decreasing meanwhile

Q: how much has been sold so far?

A: she doesn't know how much she sold already

Q: does she pay taxes?

A: no, no tax

Q: benefits of coop membership? Why is she a member?

A: coop is not very functional, at present no benefit. Coop membership is related to irrigation scheme, she has access to water pumps.

Q: water pump access & costs?

A: no pump for irrigation, they share the motor pump (resource sharing), motor pump owner share in profit, last season coop water pump stopped working, [current solution]: non-formal relationship

Q: main problems?

A: 1. Water pump; 2. Fertilizer affordability (too expensive)

Q: crop rotation?

A: yes, crop rotation to maintain soil fertility.

Q: how many people live in her household/does she support?

A: she has 5 children and one employee (who lives in her household) and herself

Q: disadvantages to male-headed household?

A: you can ask my neighbor, she is not afraid of doing any labour that men can do no disadvantage ("I can do whatever male-headed-households can do")

Q: contact to other female-headed households? Does she organize with them?

A: she does everything in the field, they can observe her but she does not advise them. There are rumours & envy from men

Q: income stability/fluctuation/income security?

A: it is a difficult business. No constant income. Loss and profit different losses according to the season due to droughts & pests

Q: in the recent past: increase in drought or pests?

A: income was affected by a serious drought in the very last season, the rain supposed to come in June [2015] did not come.

Allele: vegetable is the riskiest business

Q: future?

A: she expects to increase her business [thereby her income], the growing children can start to support her

Q: own comments?

A: none.

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2nd interview [two male farmers, brothers with equal rights to the land, on their own farm by the roadside]:

Q: how much land?

A: 1ha irrigable land

Q: crops?

A: right now 1ha onion; other seasons: cabbage and tomato

Q: who buys the product?

A: traders with brokers come during the harvesting season and buy. Trader and broker negotiate price.

Q: what about the water pump?

A: water pump from other person: [farmer has land, the other the water pump] shared with equal benefit, owner of the pump covers all production input costs, partnership: 50-50 share in profit

Q: who does the management?

A: both (he, farmer, and the other, water pump guy)

Q: workers on the field?

A: 13 workers on the field are daily labourers, their payment is based on piece performance, on average: 45 birr/day; family members work as well: 21 workers on the field in total (ergo 8 family members)

Q: coop membership?

A: no.

Q: why not?

A: they have a small non-formal coop (network)

Q: on what do they cooperate?

A: 15 members cooperate on irrigation

Originally there was one motor pump which is not functional at the moment, afterwards initiation land-pump owner tandem

Q: other income sources/activities?

A: livestock: cattle: 2 oxen, 2 cows

–but there was more cattle grazing on the field nearby

Q: does he have some security?

A: banking system: saving for droughts

Q: additional land to 1ha irrigable?

A: yes, 3ha non-irrigable land: maize (1ha), teff (no production at the moment) barley (1ha) and wheat(1ha); production for own consumption. If surplus produced, it is sold at the market.

Q: prices?

A: onions, expected price: 10 birr/kg (which includes profit), right now there is an excess supply driving the price down

Q: climate change affected?

A: increase of pests and insects from year to year costs for fertilizer have been increasing

Q: which onion seeds does he use?

A: it is a local seed, bought at the shop

Q: income stability?

A: volatility of price no stability/security

Q: livelihood sustained?

A: yes, they can sustain their livelihood.

Q: has he ever heard about crop insurance?

A: no, not heard nor does he have one.

Q: credit use?

A: yes, Oromiya Saving & Credit Institution, it is easy to access credit

Q: who is supported by the farm income?

A: family members: one brother with wife & three children, the other brother; in addition: the water pump owner.

Q: other off-farming income?

A: they engage sequentially in off-farm activity: he occasionally gets work on other farms (additionally)

Q: major problems?

A: difference between costs and prices profit

He wanted to buy his own pump, that was not possible

Q: plans for the future?

A: he is sharing the profit with the pump owner. He wants to own a pump (not share profits anymore), he wants to own all important assets, increase the profits & become an investor.

Interview 35

09-03-15

Road Seller

IG Group

Interviewer: Esther, Gerlinde, Nora, Allem, Faye, Shishay, Allele

Interview [two male farmers, brothers with equal rights to the land, on their own farm by the roadside]:

Q: how much land?

A: 1ha irrigable land

Q: crops?

A: right now 1ha onion; other seasons: cabbage and tomato

Q: who buys the product?

A: traders with brokers come during the harvesting season and buy. Trader and broker negotiate price.

Q: what about the water pump?

A: water pump from other person: [farmer has land, the other the water pump] shared with equal benefit, owner of the pump covers all production input costs, partnership: 50-50 share in profit

Q: who does the management?

A: both (he, farmer, and the other, water pump guy)

Q: workers on the field?

A: 13 workers on the field are daily labourers, their payment is based on piece performance, on average: 45 birr/day; family members work as well: 21 workers on the field in total (ergo 8 family members)

Q: coop membership?

A: no.

Q: why not?

A: they have a small non-formal coop (network)

Q: on what do they cooperate?

A: 15 members cooperate on irrigation

Originally there was one motor pump which is not functional at the moment, afterwards initiation land-pump owner tandem

Q: other income sources/activities?

A: livestock: cattle: 2oxen, 2 cows

–but there was more cattle grazing on the field nearby

Q: does he have some security?

A: banking system: saving for droughts

Q: additional land to 1ha irrigable?

A: yes, 3ha non-irrigable land: maize (1ha), teff (no production at the moment) barley (1ha) and wheat(1ha); production for own consumption. If surplus produced, it is sold at the market.

Q: prices?

A: onions, expected price: 10 birr/kg (which includes profit), right now there is an excess supply driving the price down

Q: climate change affected?

A: increase of pests and insects from year to year costs for fertilizer have been increasing

Q: which onion seeds does he use?

A: it is a local seed, bought at the shop

Q: income stability?

A: volatility of price no stability/security

Q: livelihood sustained?

A: yes, they can sustain their livelihood.

Q: has he ever heard about crop insurance?

A: no, not heard nor does he have one.

Q: credit use?

A: yes, Oromiya Saving & Credit Institution, it is easy to access credit

Q: who is supported by the farm income?

A: family members: one brother with wife & three children, the other brother; in addition: the water pump owner.

Q: other off-farming income?

A: they engage sequentially in off-farm activity: he occasionally gets work on other farms (additionally)

Q: major problems?

A: difference between costs and prices profit

He wanted to buy his own pump, that was not possible

Q: plans for the future?

A: he is sharing the profit with the pump owner. He wants to own a pump (not share profits anymore), he wants to own all important assets, increase the profits & become an investor

Interview 36

09-02-15

Semi-commercial Farmer with Biogas plant

Size of the farmland: appr. 18 ha in total, in different areas

Household of the farmer: 5 children, one is banker, the others help on farm

Different kind of crops: red onion (were about to transplant the seedlings, maize, cabbage

Whole land is irrigated

He does also fattening and dairy activities

He owns the first biogas plant in the area

Use compost and manure for fertilizing the field

Initially salinity of the land was very high -> but could change it through different management activities like organic fertilizer

Where do they get organic fertilizer from? Has biogas plant, recycles manure that is produced as a by-product from biogas plant

Currently 150 employees, demand/requirement of labor's differs and depends on time

Use mostly temporary laborers

Currently more than 30 working on the maize field

Prefer daily workers, depends on labor requirements of current field activities

They are not willing to work permanently due to high opportunity costs (Who? Didn't get the question)

He has children, two elder sons, who help with management of the farm

One has graduated and works in a bank

Are the temporary workers men or women and what kind of activities do they do?

A lot of temp. workers are women, more than men

Women are very efficient especially in transplanting seedlings, do mostly this

But also planting, digging, watering

Men start to clean land and women follow after to plant etc.

Who is buying the products of the farm?

Sell directly to traders and they sell it to Djibouti and an Southern Nations

Are there brokers in between? It’s the main problem, brokers are always involved, they make prices, exploit farmers, impossible to avoid them

Sometimes brokers are even bribed (bestechen)

Why can famer not identify customers by himself and supply directly to them without brokers? E.g. Hotels, Universities?

The customers also have their own system and use brokers

Großes Lachen: its impossible without brokers!!!

But there are some, who produce and work as their own brokers at the same time

Whom does he (the farmer) owe his success?

There are involved in farming activities since they are children, but this farm on this land plot they have since 1987

Still/were expanding on forest areas that had been cleared for farming activities

Own tractors and flour mills, can pay school fees, could save some amount of money (but doesn't want to talk about)

Do not have credit from bank, don't need one, have their own savings

From whom did they get the land?

Was forest before and owned by business cooperatives (during derk regime – socialists), after that gov. gave redistributed land an some of the coops members left land and he intervened to get some land of that area and started cleaning land (forest) into farm land, which was forbidden in later times, so he was very lucky

How does he get market information? How does he decide on what and when to grow?

Price information through TV and radio, but that price is different to the price they which they use to sell to the brokers, the brokers take lower price

Even though they know the prices they don't have any power to bargain the prices?

There is no negotiation possible, because the products are perishable and have to be sold soon, cannot be stored until the prices are good

The market is controlled by the brokers, not even the gov. has the power to control anything

What are the actual prices of red onions and what share do the brokers get of it?

Don't know to what price the brokers sell the products to the traders, they just know that they make a big profit out of it, they say they have no idea at all (you can feel they don't want to talk about it)

Ex: prices in Addis for tomatoes is 12-13 Birr and in this area its about 1 Birr, the difference is taken by traders and brokers

Ex: a truck is loaded with 80 boxes of onions, but it is considered as 60 boxes by the brokers

Is the wife of the farmer involved in any of the farm management activities? (Big laugh)

She is involved in almost every activity, without her the farm would not work

Why do students laugh? Is it a ridiculous question or is the answer so funny?
(Peters, angry)

"The answer is funny! Its uncommon maybe…"

He said he gets price info from radio. What kind of prices in which stage? Market price, wholesales price, retails price? What sort of prices are in the radio?

Does he as an experienced farmer has any idea how to solve the broker problem? What he would suggest as a solution? How would an ideal situation look like for him?

The unions could be stronger - they have some selling shops in Addis, but they should have more distribution centers, so they could be more powerful

His suggestions would be to make the union stronger and get into the market with the customers directly

Except of diversifying in crops, what other mechanisms he has to secure his income, as it is such a risky business?

Has livestock products and flower mill as additional

How deep he has to drill? And did he already experience the situation that he has to drill deeper as there was no water anymore?

23 m deep to get the groundwater

The depth depends on the level of extraction you want – if you have big motors you have to dig deeper, because you need to have a lot of water at that time (12 cm or meters for small motors (couldn't understand)

Is he engaged in some sort of social group? Are they discussing future constraints and problems like water shortage and decreasing ground water level?

They discuss: There is groundwater available, no shortage. But they worry about the rivers and that requires intervention by the gov. as the have to control the amount of extraction

Is the engine of the water pump save? Is the staff trained and is it save for the children around?

It is very common in the area and they never saw any accidents

Interview 37

09-03-15

Broker

Tomato Market

Smart and well-dressed young man. First, he refused to talk to us. He started talking when we showed him the official letter of Haramaya University.

Can you explain us your job?

I fix the price of tomato by negotiating with farmers and traders. If the supply goes up, then the price goes down and vice versa. The prices depend on Addis Ababa market. There is a network of brokers. I get my information about prices in Addis via this network.

Why did you become a broker? Educational background?

"Lack of money". There is "no better job".

I graduated in 'Survey and Geomatics Engineering', but there are no job opportunities.

What is the current price for tomato? Commission?

The current price is 2-3 Birr/kg. The commission for me as a broker is 3-5 Birr per box (which contains 58-60kg). (This would imply that his commission is about 1.6 - 4.3 %.)

Observations: It was hard to interview the broker. The atmosphere was quite tense. I cannot tell if he told me the truth about prices and commission. There were other brokers around. Some were quite attentive. It seemed as if they wanted to prevent that the interviewee told something 'wrong'. Others were making fun of us and showed us their bundles of money.

Interview 38

09-01-15

Small-scale Farmer

IG group 01.09.2015

Interviewers: Faye, Allele, Nora

Interviewee: male farmer

Q1:

A: he produces vegetables & other crops like teff, wheat & maize

Q: close by & irrigation scheme?

A: not in irrigation scheme, distance: 30min walk (1.5-2km)

Q2:

A: he has 2ha & rents 1ha additionally 2ha for own consumption

-own consumption: 1ha maize, 0.5ha wheat, 0.5ha teff

-commercial: tomato (last season), onion (season before last)

-growing year depends on life cycle of crop:

-3crops/year: onion, green bean & cabbage

-2crops/year: onion & tomato

Q3: to whom does he sell?

A: communicates with broker who arranges for the trader to pick the produce up

Q: regular broker?/communication?

A: -no regular broker

-in harvest time he goes to town's market to find a broker with a good price

-communicates with 3-4 brojers before picking one

Q: how do they agree on a price/negotiate?

A: depends on the da<, in the morning negotiation on market, broker brings the vehicle to load produce, farmer does not communicate with trader/nor see him; the later in the day, the worse the price/spoiled the product

Q: PRICES

A: tomato: expected: >10birr/kg, sold at: 1.5birr/kg (first harvest) & 1birr/kg (second harvest)

Onion: expected: 7birr/kg, sold at: 5birr/kg

Q: why did he agree to these prices?

A: he looked at the market situation, asked his friends & decided to sell

Q: price for broker & price in Addis=

A: he knows how much the broker gains per kg: 0.2birr/piece but he suspects they gain more (secrecy)

Q: actual price information besides broker?

A: gets information from farmers that have a vehicle & sell their produce as traders on Piazza market in Addis & tell him about the price (wholesaler)

Q: actual price of tomato & onion on Piazza

A: 3.5-4birr/kg for tomato (wholesale) & 7-8birr/kg for onion (at Piazza)

Q4: info exchange with farmers & coop member?

A: -info from different sources: brokers, other farmers, those who go to Piazza

-not a member of a coop

Q: why not a coop member?

A: he used to not see the benefit & now the registration fee is too high

Q: why would he like to join now? Benefit?

A: coop provides seeds & other inputs (chemicals, fertilisers) & offer as credit (pay later) which is important for times of capital shortage

Q: bank involved?

A: no agreement through bank, form signed by farmer & coop for credit

Because not everybody pays the owed money back (for the seeds advanced), the coop started to select who gets credit

Q: production costs for tomato (seed to market)?

A: he does not remember all the costs, but major expenses add to: 40 000birr of costs for 40 000kg

he faced losses in tomato production (profit margin: 20 000 if sold at 1.5 birr)

Q: what did he pay [40 000birr] for (main expenses)?

A: seed=10 000birr, chemical pesticide=15 000birr, fertilizer=5 000birr, labor=10 000birr; including labor for two fertilizer sequences

Q: wages & labor for 1ha of tomato

A: he employed 70 workers (labor days)

70 labor days at daily wage rate of 50-70birr/day according to skill of the worker

Q: change in price of seeds (tomato)?

A: -Galila & other tomato seeds available

-Galila (best seed): change in price is +500birr/year

Q(11): how important is horticultural production for income?

A: 2ha only fulfills all his family needs (own consumption),

1ha vegetable production is lottery but worthwhile

Q: other sources of income? Which?

A: no other income, but livestock, 4cows & 2 oxen, no donkeys, no goat, etc.

Q(Allele): irrigation=? Cost?

A: he uses groundwater, costs for motor of pump: 400birr/season for well renewal, around 10 000-15 000birr/season for fuel

big difference between irrigation scheme users/non-users

the others pay only around 1000 birr/season

Q: lessen risk by diversification?

A: onions were not a loss, only not as much profit as expected…

A: he never planned to diversify on his own land, he prefers crop rotation between seasons difficult to manage labor for different crops at the same time

Q: stable income?

A: it fluctuates

Q: security? Does he have savings? Has he ever taken out loan?

A: he used credits when his income goes down, micro-finance organization: OSACO (Oromiya Saving & Credit Organization)

Q: terms of such a loan?

A: another private micro finance company (credit: Busagunoofa)

-high interest, big credit (at Busagunoofa)

-low interest, low credit (at Oromiya)

Q: financial security?

A: income from other crops (wheat, teff, maize) to manage his risks in addition to credit he sells those if the harvest is good (excess of home consumption)

Q: possible risks:

A: -major risk from vegetable production:

- diseases (unpredictability) & price fluctuation

- excess rain can be a risk (damage crop), water shortage is no problem (ground water pump)

Q: crop insurance?

A: he never heard of a crop insurance

Allele: it's not common in Ethiopia, perhaps in contract farming, but there is no such service in the area.

Q: something else you would like to tell me?

A: for study/research: he asks for the findings. Solutions for the problems of brokers' big profit margin & price fluctuations

brokers are the main problem, there is no way of selling everything themselves (they are inhibited to do so)

Q: family/household size?

A: 6 people: him, his wife & 4 children (0-6 years old), 1 starting school now

Interview 39

09-01-15

Small-holder Farmer

Interview protocols (based on notes & audio recording of the actual interview)

Income Generation Group

Interviewer: Gerlinde, Nora, Faye & Allele

1st Interview [male farmer]:

General Questions part

Q: land cultivated & intended use:

A: 2ha 'owned', 1ha used for vegetable production, additionally 1.5ha rented from other farmers that have land in excess or cannot cultivate it. Additional ha used for vegetable production as well.

1ha is not irrigable: teff, maize and wheat are cultivated there.

Q: what kind of vegetable?

A: tomato, green peas, cabbage, green pepper and onion.

2-3 crop cycles per year

Q: utilization of produce (own consumption & market)

A: majority of product is sold, each week 10kg of produce is taken for own use, in the last season he cultivated tomato on 1.5 ha resulting in “80 ISUZU, 1 ISUZU=5000kg” = one harvest season

Q:?

A: now seeding cabbage for the next season

Q: to whom do you sell?

A: communicates with brokers in town when the harvest season approaches, then the brokers and the trader come to the farm to arrange the transport.

Q: what information do you get from the broker?

A: the broker tells the farmer about the price at which the trader buys, but no info on market price in AA

He hears info about Addis prices but it is impossible to contact trader directly because brokers prevent that

If he harvests he needs the trader to pick it up, otherwise it spoils & he loses all money

Q: prices?

A: last season he billed a loss in tomato, because there was an oversupply

The price: 1birr/kg in July (2015)

The season before last: tomato: expected price: 8 birr/kg, but the actual price was 2 birr/kg

He grew tomato again because the price went up after he had sold everything.

Price went up to 10 birr/kg, expecting a further rise he cultivated tomatos again

Q: who told him [about the increased price]?

A: his friends are farmers & told him

Q: why [does he cultivate] cabbage now? Due to prices?

A: the main reason is the cost of production that is much lower than for other crops, e.g. onion (from seed to harvest)

Q: what are the main expenses related to production (of cabbage)?

A: -the price of seed (much lower compared with others)

-labor (much lower compared with others)

-pesticides (much lower compared with others)

Q: type of cabbage?

A: local one (Ethiopian)

Q: does he employ people on his field (labor force)?

A: vegetable is labor intensive, certain tasks need to be completed in one day, e.g. spraying of pesticides requires 20 workers/ha per day, their wage: 60 bitt/day; 7 rounds

of spraying/crop cycle (for tomatoes) [compared to] 3 rounds of spraying/crop cycle (cabbage)

Q: [are you a] member of a coop?

A: he used to be a member, not anymore, because there was no service from the coop – he contributed to meetings, but others received the services (due to relationships corruption?

People that weren't members received seeds because they had contacts within the coop while he didn't [receive seeds] he stopped working with them, but they still consider him a member

Q: where do you buy your seeds instead?

A: seeds are available indifferent of being a member of a coop or not

if you have the money, you can buy it

no price difference, actually there is a little

buying seeds (without processes) is preferable, [buying] from traders instead of coops

Q: what is the price of seeds? For tomatoes?

A: Galila tomato seed in packed form with 2000 seeds increased from 800 to 1000 up to 1500 birr over the last 3 years. He has to invest 30 000 birr for seeds for 1.5ha.

Q: what about cabbage?

A: for 1.5ha 4 000 birr for cabbage seeds

Q: how important are vegetables for [your] income? What other sources does he have?

A: income from vegetable is like a lottery when it comes, it comes with big reward. With the price gone down it is horrible risky,

Even though but this season may compensate for last unpredictability of price & price fluctuation

Q: vegetable is his only income? Livestock?

A: yes, maize/wheat is only for home consumption

A: household income also from cattle but insignificant in general, main income generating activity is vegetable production, livestock is sold in case of emergency

Q: crop insurance known? Does he have one?

A: there is no such activity around, but he heard about it on the radio.

Q: expected price for cabbage?

A: around 4-5birr/kg of cabbage based on current price

He just started the nursery level, in 3 weeks they will be set on the field, harvest is in three months

Q: part of the irrigation scheme? Cost for electricity?

A: yes, related costs:

Total cost of irrigation is around 1000 birr for one harvest using gravity system (canal, channeling); no difference between crops

Q: how does he finance the current crop after the recent losses? Credit or savings?

A: compensates by own saving to finance current season

Q: anything else he would like to tell us?

A: main concern: price fluctuation (price for vegetables goes up & down every day), wish for processing factory/plant in the vicinity for price security (processing factors)

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Interview 40

09-01-15

Small-holder Farmer

Name: Robo

Participants: Alem, Shishay, Esther

Market-oriented Vegetable grower

Cultivated Land: 2.5 ha in total; 1ha of tomato, 1,5 ha other crops (teff, wheat, maize)

Sells tomato trough brokers/ traders from & to Addis depending on the price; can negotiate/ communicate to them; if price does not fit him/ is not suitable, he changes broker (if possible)

at the moment: very low price for tomato; decreasing; 1-1,5 birr/ kg (this year, 2015) in contrast to 7-8 birr/ kg last year (2014)

that lead to a loss of profit of 25% of tomato harvest

security/ savings: with profits of last year's produce he compensates for yield loss; also considers future gains; saving money individually at bank

Price/Market: access to market information through friends and family members

e.g. if price in Addis 8birr/kg, them he sells here for 5birr/kg; if 5birr/kg in Addis then 3birr/kg

Cooperative: Meki Batu: he is member of the irrigation cooperative since 6 years (2009)

coop delivers irrigation scheme; pays for water

he is member by interest because of the benefits

benefits: supply of fertilizer, oil for home consumption/ production, access to sugar

members do have priority before non-members

there was an extension service some time ago, but not any more; he do not have an other training delivered by coop; just water

Income: tomato/ vegetable harvest for this year was a loss (-20.000birr expenses + 15.000birr gain = -5000 birr for tomato production)

wheat production: 20qt á 8,5birr is an income of 17.000birr; more stable and secure than tomato/ vegetable

he owns also livestock: 2 oxen, 5 cows, 3 calves, 2 poultry; do not sell but for own home consumption

different costs of production: fertilizer (highest; 4.300birr), seed (4.000 by traders), labour, rent of land (2.000)

Diverse: access to water scheme, but also own water pump; so he has enough water and do not face water shortage; do not see himself affected by climate change; there is a decrease in rainfall this year, but just affect rainfed agriculture

no support by government is needed with regard to food security; there is access to basic food/ nutrition throughout the year; feels food secure; can sustain their life by own production

gender: his wife raise their children, care for livestock, household (Bakaleh?!)

applies crop rotation to manage problem of soil fertility

last statement/ comment: seeks for advice and support by government; lack of knowledge and skilled experts for technology etc. (e.g. and especially water pumps); if there is something broken he has to repair it by himself, which may lead to irreversible damage and bad quality

Interview 41

09-02-15

Semi-commercial Farmer

What kind of vegetables are they producing? How much land do they own?

Around 3,75 ha, tomato, pepper, onion, cabbage and cereals (teff, wheat, …)

Vegetables produced in summer and winter season also for commercial purposes, cereals only in summer season for own consumption

Are they using all of the land on their own or are their renting out parts of it (as some other farmers)?

No, they are using all of their land and want to rent additional land

How many family members? (around minute 6-8)

The translation was kind of confusing, different statements, maybe the Food Security Group can clear this up:

8 family members + 4 workers, all live together

7 children, 9 family members; 6 children already left home,

Family size is 15, 6 out of the house

Family size is 14

Do they also produce vegetables for own consumption? Do they have a division of the land, so one part for subsistence and the other for the market (the land where vegetables are grown on)?

They produce for commercial purpose, consumption of leftovers;

Are they part of a cooperative/the irrigation union? How do they profit from that?

Yes, they are member of a cooperative. They provide seedlings, fertilizer, … they have a share in the coop (dividend based on the share). Member of the Union as well.

When did he enter the Union, the coop and why did he enter them?

He is one of the founders of the union (not sure if I understood this information correctly), 15 years ago they became members, they entered because of the governance structure, to manage the capital for the government (cooperative policy)

They provide fertilizer and other facilities

They also got credit from the coop and used the money for commercial purpose, they would like to increase the production of the farm

Do they get all the inputs from the Union or do they also buy them elsewhere?

They get their inputs from everywhere. It is easy to get from individuals or other traders, but it is better to get them from coop or union only

What is the income of the household and how much of it do they spend on food?

Example of previous farmer, how he calculates income

He didn't tell the exact amount of income, depends on the season

Tomato: He produced tomatoes, onions, pepper mainly for commercial purpose but cabbage not so much for commercial purpose, produces only a little (2500m2), from onion in peak time he gets profit of 100000 birr in one production period, in low time 40000-80000 birr profit per ha, tomato 50-100000 birr/ha, peppers 80-100000 per ha, cabbage 1000-5000 per m2

Don't spend income on food as they are growing all they need on their own land, use profit to increase production

Kg price?

He produced tomato 400-600 quintal/ha, onion 200-300 quintal/ha, pepper 140-200 quintal/ha

Is he growing every year the same type of vegetables? Why did he decide to grow vegetables instead of other crops?

They rotate vegetables, they produce throughout the year, production depends on fertility of the soil, later they also change frequency

They grow vegetables and cereals because of their resistance in their environment, they also learned from what other farmers in their area are growing, as no one else was growing fruits they didn't try it either. They share information with other farmers on profitability

Do they get the main income or the only income from the vegetables? Do they have any other sources of income?

No additional sources of income, they rented house from the town area

How do they get information of vegetable prices? Is there a benefit in being a member of the coop?

Source of market information are the brokers, they have linkages with the brokers who give them the price information. They also get information from neighbor farmers

How is the relation to the traders? Does he feel he is getting a fair share, a good price?

Brokers don't tell exact price, they give false price information. But they know the market price and don't sell it to another price. Traders sometimes buy from field

Coop only buys products of good quality

Is there are storage option with the coop?

They didn't store, onion stays on the field for a week. If they want there is a fridge service with the Union but they say it declines the price to put the fresh vegetables in there. They want to sell directly from the field.

Who do they sell to? To which markets?

They usually sell it through brokers to traders, brokers as linkages, products go probably to Addis market

Do they know the broker fee?

1000 Birr/car

Did they ever profit from any governmental support or extension service?

Yes, extension service for every stage there are DAs (natural sciences), they regularly interact, DAs come to the farmers

What are hopes or fears for the future?

Fear: land fertility, he fears it to decline, then the market price (that it will decline) and the third fear is the irrigation (that there won't be enough water)

He also wants to invest in other things than in agriculture In the future, he also thinks about leaving the land uncultivated for some years because of the decreased land fertility (maybe 2-3 years), then grow again when fertility has become better again

Water problem: there is a little effort, they asked the officials but didn't get attention, they didn't face any bigger problem, they also use the irrigation pumps

Interview 42

08-28-15

Ethiopian Horticultural Development Agency

Place: Addis Ababa

My name is [...] and I am working at the Ethiopian Horticultural Development Agency for last 5 years at the training [...]. This EHDA was established by the council of ministers in 2008.and it is accountable to the minister of agriculture. And the agency is now supporting this horticultural industry through capacity building, through investment promotion, and also market promotion. Through capacity building we are giving training for companies, companies producing and exporting flowers, vegetables, fruits, and herbs to different parts of the world. And we give training on pre-harvest and post-harvest parts. Actually the training is more of […] and it is also practical. And investment promotion we try to [avail] lands, especially for new investors coming from different parts of the world. just in collaboration with regional and federal institutes and we also access electricity, water, its for these companies. And in marketing and promotion, we try to link these companies to different markets in different parts of the world so that they get diversified markets and better price. We also organize these logistic activities in conjunction with Ethiopian Airlines, so that their products are exportes to different parts of the world on time [...]. Actually these are the three main pillars the agency is now supporting. These are the capacity building, investment promotion, and market. (-1:05:30)

And currently we have more than 120 flower, fruits and herbs companies engaged in production and export of flowers, fruits, vegetables, and herbs. And most of them are flowers, around 85 companies, are flowers, and these companies are mainly owned by FDI's. Actually we have local and also joint ventures, otherwise most of the companies are owned by FDI's. And 80% are owned by the Dutch. And most of the flowers, including roses, summer flowers, and [cuttings] are destined to the Netherlands auction market. We have also fruits companies, actually there are few, they produce strawberry mainly, and from vegetables, lettuce, roots, and also fruit vegetables, and these vegetables and fruits are actually produced by the large company that are [marketing] for European and Middle-East markets. Otherwise those fruits sorted from smallscale horticultures are destined for regional market, especially for Djibouti. And besides the large scale farmers, we also encourage these outgrower schemes. We try to link smallscale farmers to the large scale fruit and vegetable growers. So that this smallscale growers will get access to

market and also just get technological information from this large-scale farm. So the other activity of the agency is promotion of the outgrower schemes. (-1:03:51)

Actually we have some outgrower schemes around, maybe you know, the Meki-Ziway area, and this area farmers produce green beans. Green beans, and supply to some companies around that area. And these companies take these products from the farmers and sell it to the European market. We have also some outgrowers around the Ambo area they produce snowpeas, and these snowpeas, through the companies, are also exporting to European markets. And these are some of the activities and also the pillars of the agency. And if you have any questions, please be free just to ask. Yeah.

Mengistu: Okay, Thank you very much. So now it's time to raise questions, when there are some unclear things, about the vegetables he mentioned for example. If you couldn't hear it, you can...

Nora: Could you speak up?

Mengistu: the name of the horticultural crops he mentioned, I think some of you might not captured it

EHDA: One is snow peas, the other is green beans, we have also leavy vegetables like cabbage, like lettuce, and fruit vegetables like tomato, like pepper, like paprika, yeah we have this, and from root vegetables we have also potato, we have beetroot and raddish...

Kurt: What are snow peas?

EHDA: Snowpeas

Kurt: What are they?

EHDA: It is also vegetables, eh yeah, it is like you know field peas, yeah they are similar, but thes snowpeas are eaten with their pods.

(All make recognizing sound)

Kurt: They are used in the Chinese wok system, [...] they're eaten, the peas are eaten with their...

EHDA: Pods

Mengistu: Pods

(More indistinct muttering about the peas) (-1:01:08)

Mengistu: Which of these commodities are exported? To Europe, all, or?

EHDA: Yeah. Not all, but those vegetables produced by large scale farmers are exported to Europe. Like snow peas. Like green beans. Like strawberries. From leafy vegetables we also export different varieties of lettuce, tomato, especially cherry tomato, and […] tomatoes, for export.

Mengistu: Okay

Anna: Thank you very much. Could you, I was wondering of you maybe could elaborate a little bit more on how you work together with smallholder horticulture farmers and how you try to, how you try to help them, to increase their yields, or how you manage to establish connections, exports, relationships. Could you be a bit more specific?

EHDA: Yeah, as I told you before, we just support smallscale farmers through capacity building, through transfer of technologies, and linking with the large companies. In capacity building, we try […] these farmers on how to irrigate, on how to plant, eh, how to fertilize, how to control pests and insects, so that the improved quality of the product,

so that they improve the activity of the crop, that is one of the capacity building we have. And in market linkage we try to access these farmers differenc infrastructures, like construction of cold stores, and packhouse, so that their products get packes, graded, and get required temperature in a cold room. That is another support we provide. Ans also form the linkage with the large companies so that they supply the product to these large companies and at the end of the time they will just pay them desired price for these smallscale. The farmers will get access to market. (-58:47)

Anna: So you facilitate transport to the storage houses?

EHDA: Yeah

Student: Do you have your own brokers, or how...

EHDA: Well actually the agency is doing this in collaboration with regional organizations. We have the ministry of agriculture and also the regional horticultural offices. We just work in collaboration with them. The agency is not directly involved in these activities, we just work collaboratively. For example, for the construction of this packhouse and cold store, the agency […] in collaboration with […] and exporters association they sollicitate funds for the establishment of these facilities. And this facility has originally established in Meki area. And so the farmers are using the packing and cold room for their product. Yeah. Actually there is some interference by the brokers, we also try to just remove these brokers so that the farmers will get a better price. Otherwise, one problem we have is relation to the brokers. (-57:32)

Jonas: If I understand it right, that you don't have extension offices on your own in the field? Or is it just in cooperation with agencies in regional basis or do you have own extension offices?

EHDA: Actually one of core process in this agency is technology and development promotion directorate. In those directorate there are different experts. And these experts are working also on extension. They just move from here, to different parts of Ethiopia, and they work with the Ministry, especially with the regional office of agricultural extension officers. We just give training to the extension officers working in the office of horticultural in the region, or we also directly give training to, especially for [modern] farmers. So the extension officers or the experts of the agency are just living in Addis and to be moved to different parts of the world, eh, to Ethiopia, where production of horticultural crops is there. (-56:25)

(Student): Okay, thank you. We try to observe horticultural products [in markets and even supermarkets], but the challenge of the problems that we observe are the safety and quality problems. And even we wouldn't observe the grading system, even the supermarkets, […], so is there any mechanism to address these problems, the grading and quality problems. Any controlling mechanisms.

EHDA: Yeah, one thing is you have to clear that when this agency was established it was established just to support the export of horticultural crops. We are not dealing with horticultural crops supplying for local markets. And these issues are mainly addressed by the regional agricultural offices or the federal Ministry of Agriculture. We just mainly support those commodities that are exported to the European or the Middle East or to the regional markets. So in this regard we are just supporting just those outgrowers wo are producing and exporting to different parts of the world and also companies, fruits and vegetable companies, producing and exporting to different parts of the world. Actually, the problems that you have mentioned is there, we understand, but I think there have been some effort to establish certain marketing centers around [Piazza] area so that those

products are sold in better prices. So that their safety and quality is kept. […]. Otherwise this is not the [main issue] of the agency. (-54:32)

Mengistu: [..] a follow-up question, about the exports. Are there problems, for example, meeting the required standards of buyers in Europe, or how the agency is supporting in terms of meeting required standards? Are these some certification, and related, quality related support?

EHDA: Yeah one of the requirements especially from the European market is, they have different standards: one of them is the GLOBAL G.A.P. The GLOBAL G.A.P standard. And the agency in collaboration with different international institutes is trying to certify these companies. Actually a number of fruits and vegetable companies have already been certified for GLOBAL G.A.P. so they get prices and also better markets and […]. So one of the areas of the agency is making these companies certified for different standards. It is not ony actually international standards, we have also our national standards. We have already developed specially for flowers, and this standard has different levels, as bronze, gold and silver levels, and more than 90 percent companies, flower companies, have already been certified for local […] developed for flowers. We have also standards for fruits and vegetables, just developed in the country, and we are also trying to train farmers, so that they just certify for this. Otherwise, most of the fruits companies, exporting their products to Europe, especially certified for GLOBAL G.A.P. (-52:42)

Mengistu: Any else question? …. Okay

Busienei: Well, do you usually... in fact, allow me to start with this question of the linkages, linkages between the smallscale farmer and large-scale farmers. […] asked earlier on. But, my challenge was these smallscale farmers are they accessing the international market also, or just leave with the […].

EHDA: Yeah this time they are not directly accessing to the international market. Just access to international market through companies. Through large-scale producers. These large-scale producers they already have markets in Europe and Middle-East. So they just collect or receive the the products from smallscale farmers.... and sell it to different parts of the world. Otherwise, if you know the Meki Batu, fruits and vegetable growers, marketing, the union, they just try to sell the products collected from smallscale farmers to different parts of the world. But they have not yet been successful. Otherwise they have been making effort, to just links these farmers to different parts of the world. Otherwise, the experience we had so far is that these smallscale farmers are accessing to European markets through large-scale companies. (-51:06).

Busienei: Do you […] negotiate, prices for them, these institutions, on the international markets.

EHDA: Sorry?

Busienei: Do you negotiate? Prices.

EHDA: Okay... The agency, actually, no they don't directly negotiate. Rather the company it has it's own market information, and depending on that market information it will deal with the farmers. And if the farmers agree with that price, they make agreement, and they produce the product, and sell it. And if they don't agree with that price, they just cancel the agreement. Otherwise, agreement made between the companies and the producers. [...] what the agency is doing that, the agency will just inform the companies, just inform and discuss with them. So that they will take the product from smallscale farmers. So that the smallscale farmers will have market access. Otherwise, the agency, […] just searching for market information and price, and...

Busienei: I have also another one, this is the last one. Regarding value addition. Do you [the measures] to adapt value addition, because we had the opportunity yesterday to visit one of the supermarkets, and we found out that some of the products there are […] imported from Chili, Italy, or... other parts of the world. Yet, they are being grown here. And, value addition can be done with them, and they can actually fetch higher prices. Instead of them going to those countries and coming back at a higher price. You know […] actually enlightening these smallscale farmers […] large-scale farmers to come up with an institution nearby, that can be value addition (-48:52)

EHDA: Value addition is processing, processing, to juice, or jam, something...

Busienei: Yes, maybe like […]

Mengistu: On the same […] yesterday, we had the chance to visit supermarkets. What we observed there was, we saw packed fruits, and vegetables like avocado, tomato, mango and others, they're imported. And packed. They're imported from Italy, from Chili, they told us. We were surprises because these products are also produced here in our country. The products are there, what the […] is, processing, are the processing issues, packing and so on. The question is whether the agency is maybe is encouring these companies to maybe involve in processing or some process activities, to pack, at least to increase shelve life, add value […]

Busienei: Maybe I'm not getting this properly, we produce these products from the farm, and we sell them, on the international market. The vegetable to get us exchange is low. But if we process, we may end up enhancing the [rate for it]

EHDA: Right you are, yeah, actually one of the problems in Ethiopia we have very limited number of processing companies, processing companies. Maybe you know the […] industry, they habe been processing fruits and vegetables for the last many years, but it is the, actually, the only large processing company in Ethiopia. Otherwise there are very few companies who are processing mango here, around Addis. Otherwise we don't have. Other thing the agency, till now we are supporting exporting of fresh products. These processing companies are mainly supported by the Ministry of Industry. The Ministry of Industry. We just mainly supporting those producers that produce their products and export it freshly. Otherwise we have this gap, we understand, if farmers aare processing their products, they can get better price. And I get, the information I have, is that this Meki Batu Union, they are also trying to establish this processing plant around the Meki area. So that especially tomatoes, they produce tomatoes in large amounts in that area. They try to process these tomatoes and export it to different […] They just have plans to establish that plant. Otherwise, the agency is supporting the smallscale and large-scale companies exporting their products freshly. And the mandate for that, is giving to the Ministry of Industry. (-45:57)

Sandra: I would like to know, if the agency is also dealing with gender issues and the role of women in the horticultural value chain. Are there any special projects, that support women?

EHDA: Projects, on the value chain, you mean?

Mengistu: On gender issues

(indistinct muttering)

EHDA: Actually, one of the components of the code of practice is social affair. Actually, this code of practice, has different parts. One is environmental aspects. The other is social aspects. And this gender issue is addressed in social aspect. We try to train companies so

that they just intertwine gender issues in [respect] of companies. So we just address these gender issue through the training we give for these companies.

Mengistu: Thanks

Cordula: Could you maybe give us some numbers of how much investment, especially foreign investment, you attracted so far and how many scallscale farmers are reached.

EHDA: Yeah, actually I can just give you the exact figure in written form. Maybe not exactly […] because the figure is fluctuating time with time. Otherwise I can give you the hardcopy, no problem. Otherwise, what you have to know is that most of the companies, […] flower companies, […] fruit companies, are mainly owned by FDI. For example if you take the flower, 80% of the rose companies in Ethiopia are owned by FDI. And most of them are the Holland, the Nethelands. Actually we have some local and joint ventures, but most of them are FDI. Regarding the smallscale, as I have told you before, we have some experience, we have some, eh, some maybe 100 something cooperatives farmers, cooperatives farmers in the Meki area, they just produce these green beans, for companies. We also have some 30, 40 smallcale farmers around Ambo area producing snowpeas, for export. Otherwise I can give you the exact figure … […] (-43:22)

Gilbert: Thank you, thank you for your patience. I come from Kenya...

(indistinct muttering)

Gilbert: One thing that your sister organization in Kenya, the Horticulture Development Authority, in Kenya, the [directorate], is doing, is seeking to protect farmers from exploitation by middlemen, who come and fix themselves within the value chain. So that at the end of the day, they end up getting all the profit. And farmers end up getting, virtually getting almost nothing. I don't know what mechnisms you put in place in Ethiopian side. In the Kenyan side, they are trying to register every, eh, to monitor any type of agreements that are there between the farmers and the stakeholders, eh, the brokers, or the farmers and the exporters, to ensure that at least what they signed for is what they get back. I don't know whether there are these kind of scenarios and what you are doing to protect the [European] farmers who are exporting, or you have helped, as your […], to link the large-scale farmers. Because what the large-scale farmers do is when they have a consignment that they cannot satisfy by, from their own production, then they contract outgrowers to produce for them and bring them, and they can sell it so it's their product. But at the and of the day when the money comes, then how much they pay the farmer, remains at their own discretion. And I think […] […] whole negotiations. Now that you are in charge with capacity building and also insuring there is […] farmers will take […], how will you, what […] are you putting in place in Ethiopia to ensure that these traders and exporters and middlemen don't exploit the middlemen eh., the smallcale farmers. (-41:05)

EHDA: Yeah, eh....

Gilbert: That is one, the next thing is, agriculture as climate [prevent] enterprise, and there are, there is a lot of dynamism in the climatic scenarios globally. Associated with global warming, climate change, climate vulnerability, […] the seasoning, the seasons are changing, and the climatic conditions are also shifting from time to time. And planning is becoming complex. What support systems have you put in place to support farmers in order to deal with […] on capacity to cope with the [variability] of climate?

EHDA: Okay, eh... actually from the information I have, is that one, one of the differences between the Ethiopian Horticultural Development Agency and the Kenyan Horticultural Development Authority...

Gilbert: […] now changed to Horticultural Development Authority Directorate.

EHDA: this Horticultural Development Agency is not given regular […], is not given mandate to regulate this kind of activities. But I think the Kenyan, the Kenyan ones is also engaged in regulatory activities. We are just given the mandate to support these smallscale and large-scale companies wo are just getting their products to the export markets. We just support them. Otherwise, this specially enforcement, law enforcement, […] given to regional offices. We just support these smallscale farmers to access the amrket through [discussion] with companies. Otherwise, we are not directly engaged in regulatory activities like in Kenya, that is the difference. Actually, we are now discussing with the Ministry of Agriculture so that the Agency will be given a better authority. So that it will exercise such kinds of rules and regulations. Otherwise one of the gap we have is that (-38:44)

Gilbert: So there is a policy gap?

EHDA: Yeah. There is a policy gap, yeah. We are not given this mandate, when this gency was established. About climate change: Actually so far we don´t have such experience in this [...], but what we do is that we are given informations especially about temperatures and rainfalls, from the Ethiopian Meteorologic Agency, we are given the information, and we try to dispatch this information to the companies, even to the smallholders companies. So that they will know the pattern of the rainfall, and will know the pattern of the temperature, so that they will accordingly adjust their practic. So that they will accordingly will arrange their way of cropping. Otherwise, this agency, we don't have this system that we collect this kind of climatic information, instead they send us from the Ethiopian Meteorologic Agency. We just dispatch this information to companies and smallscale holders (-37:35)

Busienei: Okay, maybe enlight […] especially on climatical issues... The farmers use greenhouse, greenhouses, in their production?

EHDA: Smallscale farmers. Actually large-scalefarmers, especially those producing flowers, especially rose, they produce […] in the greenhouse, in the greenhouse. […] for some summer flowers are poduced in the [open fields]. And we have also few large-scale companies producing tomato, paprika, in the greenhouse. And most, the rest of the vegetables, are produced in the open fields.

Gilbert: In terms of our [main concerns] would also be the development of the value chain. How do you get involved in the development of the value chain? One thing that you told us in your talk is that you get involved in linking smallcale farmers to large-scale farmers so that they are able to access world markets. Now, in this linking, do you fin them involved in any kind of contractual relationships or do they into just informal relationships? Eh, of business where, well, once you produce then you can sell. But, the contractual relationships I see operating the Kenyan […] farmer is contracted by large-scale farmer to produce a certain consignment and at the end of the product, when the product is harvested, he knows exactly when it's ready, then the contracter will come and get the product and able to pay according to how they agreed. Now, I don't know, according to the Ethiopian scenario, are farmers, smallcale farmers, engaged in a contractual relationship with the buyers or the large-scale farmers and exporters to the extent that they are able to get the price they negotiated in the beginning or is the power [...] to change the price of the product with the buyer, so that the end of the product the buyer can easily change the price, leave the farmer wondering what exactly to do. […] or the prices. (-35:04)

EHDA: Actually it is a contractual form of agreement. What they do, that the farmers will be informed to produce this hectare of land with the company. They just agree. Actually they just sign, prepare a sort of...

Mengistu: agreement

EHDA: Yeah, agreement. They also sign. And during signing, the cooperatives, the farmers cooperatives and local administrations are also there. They just sign. But the problem we have is that at the time of harvest, if the local price becomes higher than the international price or the price that farmers are agreed with the companies, the farmers will be just, they just eh,

Mengistu: violate

EHDA: Yeah, violate the agreement and sell it for local markets. That's one problem we have. Also, they're also initiated by the brokers, so that they sell the produce to the local market, that's one challenge we have. The other challenge we have is that the farmers, they don't strictly follow the farms practice. So they are trained by the extension offices, and even by the expert from the Ethiopian Horticultural Development Agency, they don't strictly implement those recommendations. And as you know, those products started for international markets, they should be quality enough. So the company will not get the desired amount of products during harvest. That is a problem we have. So this thing should be solved in the future. Or otherwise, the form is contractual (-33:18)

[...]

Mengistu: Gilbert, let's give us a change for others as well.

Kurt: I have a … sorry...

Florens: I was wondering, the process of linking smallcale farmers to large organizations, do these large organizations also have a financial stake in this? Are they paying, are they financially involved somehow? In the process of organizing these linkages?

EHDA: You mean the national companies?

Florens: Yeah, for example.

EHDA: Yeah, negotiation is made from, is made between farmers cooperatives, and the receiving companies. These companies, they may be multi-national companies, they have, they have already established markets in different parts of the world, so they just make agreements with farmers cooperatives and during harvest they collect the produce from farmers and export it to different parts of the world. (-32:23)

[Undistinct talking]

Florens: […] build between the farmers and the organizations by this agency, right?

Mengisto: He is just referring to the linkages between the smallholder producers and the big companies, I think.

[...]

Kurt: the outgrowe scheme

EHDA: Yeah, we have smallscale companies, smallscale farmers, actually they are organized in cooperatives, and we have large-scale companies, they also produce, they also have their own products, they have, they have their own farms around the smallcale farmers. So, when the products get [harvested], they will collect from smallcale farmers, and exported to different parts of the world. So the agreement is made between the farmers cooperatives and also the company. (-31:27)

Kurt: I think for the... sort of... hardcore international products, like green ... I am not talking about the flowers, I'm talking about vegetables, like the green beans, the princess beans, or the snow peas and so on, where there is hardly a local market, there's a different type of market chain. Because it really starts from the demand of big supermarket chains in Europe, dictating the quality and the amount and having basically agencies here to make sure that the production is according to G.A.P. Otherwise, they won't take the product. So there is high risk involved, but they manage apparently though their own sort of, eh, G.A.P.- agents that the companies can adhere to the quality standards. Is that also the case here in Ethiopia? And if so, how are the smallholders involved in this evaluation of processes according to the G.A.P., European G.A.P. being imposed on your production? That was the first question I have. (-30:15)

EHDA: Actually it is starting from the seeds, the seeds, the botanical seeds. Eh, the smallscale farmers are provided by the companies. They companies have their own […] according to their clients, they just provide for the smallcale farmers, and they also train the farmers how to produce. And according they'll just to keep the quality. And, actually we are trying also to certify these smallcale farmers for grow at G.A.P. But we have not yet. They are just exporting the products by the certificate the companies have. Yeah, the companies have. So, the companies, we have frequent visits for smallcale farmers so that they will keep the quality of the product.

Kurt: Follow-up thing there. There is a risk involved for the smallholder grower and I would really hit the risk here. The smallholder is providing the products to the company, where the link to the exporters, to the supermarket chains, in Europe. Under that sort of G.A.P. Now, certain demands may change, and the company may decide we have to adjust our quality standards in order to meet the exported volume to the demand volume. And, if the farmer is not able to hit the top quality, he is a loser.

EHDA: Right

Kurt: Because the company say: Sorry, my boy, this time you are not in this game here, sell it somewhere else. And for those products which have no market in Ethiopia the smallholder farmer has really a risk. I was wondering how you address that.

EHDA: Yeah, one of the problems we have is that for example if you take the green beans, the rejected person […] for example 40% of the product, like tomatoes. And this 40% [tomatoes] are suplied for local markets. But in case of snowpeas, these snowpeas, are not eaten by Ethiopians. So this is a gap we have. So the agency will just continue support these smallscale farmers so that they produce quality products. That is one of our strategic areas. Otherwise we have very very short experience of producing for export markets. Most of Ethiopian products are supplied for local markets. And these local markets do not demand standards.

Jonas: Perhaps one question also concerning your focus on international markets. And, especially in horti- and floricultural products need good infrastructure and close [chains] for example flowers to be sold in a good way to European markets. Are you somehow cooperating with other ministries, maybe ministry of infrastructure, to build up infrastructure for international markets, to get the product fast to the airport, and then to the market of demand. (-27:00)

EHDA: Actually most of the flower companies are established aroun Addis. They are accesible for roads. And also they're also accessable for Bole international airport. Actually, there are also some flower companies that are establishes around areas with rough roads. They complain for that. But the agency, in collboration with the regional offices, also even the road authority, it is trying to access these roads for these companies.

Otherwise most of the companies, especially those producing flowers, roads are established around Addis, where there is better infrastructure. In terms of electricity, in terms of road in terms of water. Otherwise there is some gaps and the agency is trying to solve that.

Kurt: very quick question, who is concerned with the negative externalities caused by those Foreign Direct Investment coming here and doing something for the European market? There may be negative externalities to the local [situation]. Who's dealing with that? (-25:48)

EHDA: Yeah, actually, we have had a new proclamation, we have now a new ministry, the ministry of environment and forest. And this ministry of forest and environment is given mandate by the government just to check these companies. Now, the companies, they are forced to comply to at least the bronze level, code of practice, bronze level. Unless they satisfy this requirements, they are forced to not export, to not produce. Otherwise, if they are not not certified for this, there are no satisfying for environmental requirements, for social requirement. So now the ministry of forest and environment is given the mandate to check and enforce these companies.

Kurt: […] With authority? With power?

EHDA: With power, yes.

Gilbert: So you are saying that, if I hear it right, for a company that is polluting the environment, they can actually […] charge it, or able to block it from any […].

EHDA: Yeah. Now this authority is given for this. Yeah actually, like the Kenyan experience, since the establishment of these flower companies, especially the Ethiopian Horticultural Producer and Exporter Association wants training these companies so they will comply, especially, for bronze level. For the code of practice. So most of these companies have already certified for bronze level. They just try to keep the environment, they also try to keep the social affair. Otherwise if they just violate this requirements, the ministry of environment is giving authority to just stop these companies from production and exporting.

Kurt: Has that happened? (-23:37)

EHDA: Well, it is starting to exercise. Otherwise we have information, actually the agency and the association we have a frequent follow-up. Follow-up for the companies, we check if they just keep the environment. For example, if you take these chemicals, they just have sorts of pits they have to put these chemicals into. So that these chemicals wil not pollute the rivers around there. And whenever employees are appying chemicals, they are provided with protective clothing.

Nora: Just a follow-up. What will role does land tenure policy play in your work in that context? Like, you talked about how FDI's may be persecuted by the ministry of environment id they don't comply with certain environmental standards. But at the otherhand, many of these FDI's have already been granted access and long-term tenure of certain areas, how do you manage potential conflicts between not allowing them to use it but still they have a permit to use it? (-22:19)

EHDA: Actually, it will have it's own modalities. It's own modalities. Otherwise, these ministry of forest and environment has already given the mandate to exercise is. Unless these farm, eh these companies are not comlying for Ethiopian bronze level, the will be forced to not produce and export. It will have it's own detailed modalities for how to make it practical.

Nora: And how does your agency, how is your agency concerned with land tenure?

EHDA: Land tenure. Well, actually, most of the companies in Ethiopia, they just rent this land either from the government or from the local farmers. They just rent for longer period of time. And the other thing, the government is just paying compensation for the smallcale farmers and rent the and rent the land for these growers, for longer periods of time. Otherwise, in Ethiopian context, you can buy or sell land, in Ethiopian context.

Mengistu: Land is owned by the government. They rent, lease system, they have the right to use, they don't have the right to pollute. So that can be controlled actually.

Nora: It's just that, I noticed that you, in our pre-visit research, that most FDI's are granted access and user rights for such a long time, long time horizons at a very cheap price. Also compared with other African countries. And perhaps, noticing how FDI's have been […], have been increasing, this is also an incentive for the Ethiopian government to make FDI land rents more expensive, because you are very competitive internationally. (-20:15)

EHDA: Yeah. Actually one of the incentives we have in this line, we have different incentives, one of incentives is just availing land cheaper, with cheaper rent. And most of the companies, flower companies, just paying very small amount of money. And that's one incentive. Another incentive e have is five years, fice years exemption from taxes. And other incentives is just duty-free importation of capital goods. That's why most FDI's are attracted from different parts of the world.

Nora: Yeas, that's what I am saying there are so many attacted, it may even be feasible to ask for a little more, or not […] long time period

Mengistu: She says that there is a possibility to increase the price for rent.

[laughing]

EHDA: Maybe in the future

[laughing]

Busienei: Maybe I can assist, […] this country, because, […] you can just look at it, wholesomely, […] even in other countries. In most cases, when it comes to Foreign Direct Investment, countries, when they want to encourage, other coming [to invest], they can actually […] whatever you talking about, the taxes, duty-free items, and even leasing. But they can be given some […]. […], whereby they can be allowed to […] what they have, and where the country can start asking higher rates. And that […] will be done in a […]. Institutions […].

EHDA: But this flower industry is very new for Ethiopia. So I think the government is using this strategy for attracting more investors. But in the future, yeah, in the future, yeah. (-18:07)

Mengistu: In relation to the issue of rent, the price, people call it even land-grabbing. […] from our side. But from the government's side, it has also lots of other benefits, like transfer of technologies, […] of employment, Ethiopia has a large human population, and related is also scarcity of lands is not a […], and from the government's side these benefits are also need to be considered. And that's why we are encouraging FDI.

EHDA: […] the foreign currency. This sector is just […] a lot. Foreign currency.

Kurt: Since you also involve smallholders in this export orientation, in the horticulture, are they, are the smallholders equipped with a different type of land user right than the teff grower? And the question is actually: what sorts of incentives are those farmers given to invest in land. Because sometimes, investing in land means there has to be a very very

secure way of knowing that that land can be managed. So I was wondering that if they go into this business, they really need to invest in land, maintain the land, whatever they do there, they need to have particular user rights. Are they changing these user rights for those people? Or is it the same Ethiopian Kebele type of user right?

EHDA: Yeah actually, we don't have different rights. Farmers are producing these exportable fruits aand vegetables on their own land. For example, if a farmer is a teff grower, it can just produce these snowpeas or green beans on some, on some area. Of that land. Otherwise, these farmers is not given special incentives it just produces on its own land. Just allocate some of the land for green beans. (-15:48)

Mengust: In relation to that, the government is also certifying land, land certification. So that farmers can invest in […]

Kurt: That's what I mean, that's what I mean.

They have the right to use at […]. And if that is going to be taken away, they have the right to be compensated also.

Kurt: It's an issue of collateral. These smallholders have not access to credits, they have no collateral. And the question is, whether the user rights can be modified in such a way, that they can access, or are provided with financial aims to invest. Because intensification and specialization does not go without investment. And for me, it's a puzzle. And maybe you can enlighten that.

Jonas: Also one question about that. You said that the smallscale farmer producing for international markets, are they like converting from products for conventional markets to those products for international markets? Or are they, just given some, as you just said, like the teff growers that can grow on just certain amounts of his land, dedicated for [...] product for international markets. Asking the question, because of the topic of food security, because it's also a topic in Ethiopia, obviously, so are there any measures to protect the national markets for shortfalls of products because farmers are changing from locally marketed products to internationally marketed products (-14:09)

EHDA. Yeah, actually these farmers who are now exporting their products to different parts of the world, they just produce those commodities, especially demanded by international markets. For example, take snowpeas, is not demanded in local markets. Maybe this international hotels, found in Addis or in other cities, may demand snowpeas. Otherwise, the local people, they don´t need it. Green beans, maybe this time, it is improving. Many people in Ethiopia are also just consuming green beans. Otherwise, most companies exporting these fruits and vegetables are just […] the demand of international communities rather than the Ethiopians, they just advise farmers to produce those products that are targeted for international markets. Otherwise, actually, we just support production and export of fruits and vegetables not only for getting foreign currency. It should also have it's own role in food security. So the farmers should be just trained or informed to produce those vegetables or fruits that are also consumed in Ethiopia too. For example if they produce tomato, this tomato can also be used in Ethiopian market, because it has high demand in Ethiopian market, besides the international market. So, when the agency is supporting these local companies, it is is not only targeting the export market, eh, foreign currency, if it's possible it's also motivate farmers to apply also for local markets. So that it will improve the food security conditions here in Ethiopia. (-12:10)

Gilbert: A follow-up to that, is a question of poverty alleviation. I don't know to what extent […] of this farming systems, especially meant for export production, being a good measures of the mechanisms of the country's efforts to address poverty in the country. As

a poverty alleviation mechanism. In this case, I'm concerned about whether the farmers arrive at living standards. Is found that their living standars improved now that they are involved in agricultural production for export […] ? or do they arrive, livelihood would become even worse than they had before? I don't know what experience you have through the time that the agency has been working on […] connecting them to the international market, […] to producing for international markers, is there a change in their living standards? (-11.01)

EHDA: If you see most of these fruits and vegetable companies, most of them re established around smallscale farmers here. Amd most of the, especially tehse workers. Workers engaged in daily activities. They are farmers, they are employed by these companies. So the farmers will get additional income. That means their living standards will improve. They will produce their own crops and besides that they are employed at companies so that they have additional income. These compnies, besides directing foreign currency, they also have their own indirect effect on improving the poverty situation of the farmers. And the other thing, those farmers producing snowpeas and green beans, they get better price. Mostof the time. So their income is improved, due to these. And other thing, these farmers are also accessable for better production practices. For better agricultural technologies. So that they productivity and the quality of the products they produce is improved. So these companies, large and smallcale companies, they have their own direct or indirect impact on poverty. (-9:27)

Juliane: Sorry, I want to get back to this gender issue, Because, as you said, there is the social part of your work where you tackle this issue, or you try to, I don't know, [...] on this women role. Can you maybe specify how you do this and where exactly in the value chain you try to, like, support the women somehow. Because, today, I just realized that also a lot of retailers were women, actually, and not only on a farm level, but also here at the market, as retailer, so are there any things you do, or...

EHDA: As I told you before, one of the activity we address in the social affair is social issue and also thse women issue. These things are addressed in code of practice. And for example, when the woman is pregnant, she is not forced to work in the company, she's is given a leave. She's given a leave. Even in the leadership areas, the companies are trying to just bring ladies into power. And the other thing is, they just get employment, they get employment, most of these women are farmers, and they just get employed in companies, so they get income for their house. So, in this way, the women are also benefiting in the companies.

Sandra: Earlier you also said that you are also training companies on gender aspects. Can you give more details on how these trainings work and what parts of gender aspects you are trying to train the companies? (-7:19)

EHDA: Wel actually, the training is not given directly by the Ethiopian Horticulture Development Agency. We have trainers in Ethiopian Horticultural Producers and Exporters Association. Maybe you know Dr. […], I don't know, she's working there. And, the […] lines, are clearly indicated in the code of practice. Otherwise, I think the companies are given training about different activities related to the gender, about the empowerment, empowerment, about the time allocated to [HIV] activity, maybe about the leave, you can just find that […] in code of practice.

Mengistu: We had actually a plan to have a discussion with the Ethiopian Horticultural Producers and Exporters Association also. We had an appointment, but later they said they have a meeting in relation to that Global G.A.P. issue, and that is why we couldn't get there. Otherwise.. [...].

Gilbert: Before we had that social issue. Today in the morning, we visited the market, and I was baffled.

Kurt: The vegetable market

[people laughing]

Gilbert: And I saw some young man, carrying huge luggages, heavier than himselve I think, when he was walking you could see where actually, literally, […] God to help him. What help mechanisms have you put in place to ensure that the population is guarded against old age diseases, [sicknesses], […] because they are taking a great risk.

Mengistu: This agency is not related to...

Gilbert: I'm thinking of the agency as an horticultural development agency, that is concerned with fair trade. There is something in the Global G.A.P. about fair trade, an all that, and this is your concern to oversee there is fair thade in this relationship. How people get employed and whether they're paid […] in relation, for exact the kind of work they are put in. So that at least you can see there is some relationship. It is not only in the, in the market here, that is just a case. But looking into the farms themselves, the labour that is, […] the farmers in working, how are they paid their daily labor, if you work for the whole day, they paid a particular amount of money, because you work maybe for that farmer. These kinds of scenarios, are you involved in them, to ensure that the farmers pay their [...] accordingly. So there is the rule of the fair trade, as it is in the world market. Is actually a two-trail, everybody is getting what they should get. Giving the risk they're taking (-3:50).

EHDA: Actually some of the companies are now being certified for this fair trade, but the agendy is not directly involved in that. There are some companies, international companies, they just come to Ethiopia, training companies, certifying companies. Otherwise especially these social issues you addressed, they are also addressed in Ethiopian code of practice. Unless these things are not assured in companies, those companies are not certified for the Ethiopian code of practice. And especially the association, in collaboration with the Ethiopian Horticultural Development Agency, will have a field visit. We just ask those employers regarding different social affairs. And when this companies will just satisfy those requirements, they will be certified for. Otherwise, this is one requirement found in code of practice. In case of […] we are not directly engaged. But we have this social affairs ministry, they're just engaged, they have their own activities in this line. They just follow this thing. For those workers working in the companies, it is also included in code of practice. So, these companies, unless they just satisfy these requirements, they will not be certified for. Actually, if these issues are in companies, the workers will [raise] action […] (-2:20)

Kurt: I think [we're] very grateful that you offered us a chance on a friday afternoon to meet with you here and to discuss these issues, which we all understand are challenging issues. You're a new industry here, you have the advantage of learning from some neighboring countries. So that's an advantage actually you have. Not to follow the same steps but [bystep] certain things. At the same time, you are in an industry, which I call sometimes a nomadic thing. Because these European markets are very very funny. And the suppliers of the market, the big exporting companies, they're like nomads. And if they find another countrym which they find even more, which is giving them even more opportunities to produce at a lower rate, they move there. It was striking. So, it is a volatile, very challenging area, where I fully agree with you that Ethiopia has made a fully inroll and I think also create a major benefit to many people but at the same time also some, say, negative externalities to others. And I do hope that you can balance all these

things nicely here, with the help of other colleagues, Ministries and so on, because you can learn from your neigboring countries, where things have also gone the same roll. Anyways, it's a very challenging field, we I think have learned from you about the structure, this sort of Value Chain complexities, and we are much better equipped now when we move down to the production scene in the Rift Valley to understand those who are involved in there. Thank you very much for giving us this chance.

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08-28-15

Ethiopian Catholic Church

Social and development office Meki

Catholic non-governmental organization

Have offices in 5 other compounds

26 projects which are implemented around the area

Different donors: mostly CARITAS Austria and CARITAS Germany

The projects are for long term implementation, e.g. irrigation projects (small scale and large scale)

During implementing these activities we use a (CPO) community-based approach for their projects, group meetings etc.

The organization only support them with different inputs: pumps, improved seeds, trainings

One of the main working areas is irrigation: Around this area more than 100 groups for irrigation, more than 20 groups for food security

The problem of the small scale irrigation is sometimes the market, because all the farmers produce at the same time onion or tomato

During harvesting time, especially this year, the price for tomato is too low for e.g. tomato 1 Birr

The other problem is, within the group the solidarity, it´s impossible to organize more than 12 members; after one or two harvests there can problems occur within the group

12-14 households in one group usually, and they own around 1 to 4 ha, provide them water pumps and trainings and seeds e.g. onions, also how to prepare compost

Interview with Integrated food security project manager (former student of Haramaya University)

What about the food security in this area?

Who are your partners/organizations you work with?

Beside the support with water pumps is there any technical training, so that in case water pumps break down they can be fixed by themselves?

Do you have some programs specifically for women or FHH?

Regarding climate change, do you put any adaptation strategies in place so that the farmers can help themselves, especially regarding water?

Where is the water coming from you use, lake or ground or river?

Is your office developing new irrigation systems?

In General: Before we provide any tools or material, we provide trainings to the farmers, how to operate the pumps, pump more complicated than other pumps, 3 inch pump system, train how to operate, how to fill the fuel

Not only that: also train women how to plant 5 to 10 days; they are allowed to train women because they are a legalized certified organization, do it in cooperation with experts from the gov for the different topics like water management

They coordinate the co-working with a lot of authorities and facilitate support with materials, input and the experts train the farmers

Have cross-cutting gender and food security integrated issues: e.g. only FHH benefit from small ruminant, more than 320 have been provided with sheeps and goats and 160 with poultry

Marketing project on value chain, train farmers on how to communicate in markets without brokers

The problem is, that around here there is a high production, but prices for e.g. tomatoes are very low (1-2 Birr), supply is higher than demand

Discuss the problems with stakeholders, traders, wholesalers

Brokers are a big problem, they are everywhere involved, try to tackle this issue by involving all stakeholders

Farmers go to the market and communicate with traders

Can you explain how you want to manage to exclude the brokers? How get you organized the farmers entering the markets?

Observe problems and train farmers directly on market issues, it´s really hard to avoid the brokers

There is one very big cooperative union (Meki Batu Union), but even this one is too small to solve the problem with the brokers

There was something about staple crops, but I didn't understand it

Do you organize your farmers to bulk up with their products and to enter the market with a defined volume of product directly to traders so they avoid a few brokers along the value chain? Or do you link directly up with the Addis market?

Mengistu: How do you realize that in terms of your strategy and trainings with the farmers?

We try to make the farmers produce at the same time

Kurt: Scaling up of the products for the markets, increasing the volume

Another problem is the food security issue in the area

Irrigation issues: get water from Meki lake or groundwater, but there are problems with salinity in the groundwater

Promote composting and try to reduce chemical fertilizer and pesticides

Try to reduce soil erosion, soil fertility problems

You also promote irrigation schemes, how you adapt irrigation to water management strategies? How do you want to improve the irrigation systems?

We have a water irrigation group in the community (water management committee

We try to reduce the waste of water, is done by the experts of the irrigation group

The irrigation groups have schedules how and when to use the water of the fresh water sources

We have one DA agent who lives in the area – he also follows the irrigation scheme

Lake Ziwai is decreasing a lot over the time from 64 m depth to 3 m in 5 to 10 years

Its also contaminated

Started soil activating and biological activities to save the lake, but maybe to late, its obvious

Promote natural pest management systems

Jonas: Coming back to the issue of food security, did I understand right that the problem is not that severe here. And could you perhaps elaborate more on food security and expenses, what people have to spend from their weekly or monthly income? And what is the nutritional value of the food here?

What can be improved in terms of food security? When you now try to produce vegetables at the same time, does it mean there are sometimes shortages of certain products? Does it have an effect on the quality of the drinking water, salinity?

Nora: How you force the income generation along the value chain in general and for small holders in particular? What has been the impact of your irrigation schemes so far compared to the state before?

Alex: What is your definition of food security? How do you train the people on nutrition issues?

In order to fight the brokers you said you want to bulk up the producers, isn't it effecting the price also negatively when you all produce at the same time, doesn´t these things also work against each other?

Which kind of difficulties do you face especially when you work with women programs?

Sandra: Do you only work with FHH or do you also address women in MHH? What is your impression of the challenges and constraints of the FHH compared to MHH?

The farmers who have not enough land like 3 or 4 ha, we focus on households that produce 3 or 4 times a year

A major problem is the salinity of the water, its about to find out which plants can deal best with the salinity by osmosis

Malnutrition: the major problem is the knowledge of the family and how to feed the children in quantity and quality of the food. So the main issue how to address this problem is how to train the household and especially the women on this topic, because they have the major responsibility

The problem is not only the shortage of food

Can you give some examples on malnutrition and the inappropriate use of food?

In terms of nutrition we have also the strategy for our farmers to show them which vegetables they can use and we also provide them seeds and how to make/use composting – we train them, we demonstrate how to use and how they can cook especially for less than 5 children

Without solving the problem of malnutrition it is impossible to secure food security – we have this strategy integrated in all our activities, we train the females, then we demonstrate, we provide seeds

Can you give an example on what kind of vegetables do you choose?

Food cooking, different kind of cabbage, snap bean, porridge (not only one kind of porridge for less than 5 children)

I am not a nutritionist, but I believe that milk is important and I am wondering if you consider this in your advices/trainings

Yes, we have also nutritionists in our office. The problem is not milk, but the type of vegetables they have, but don´t use! The milk is obviously everywhere and they can use it rather than these vegetables

its diversifying the diet through different merge of vegetables, it´s crosscutting: it´s a life-based diet, here is a carbo-based diet?

It´s all crosscutting: about climate change, about gender, about nutrition. In terms of income generation activities we have also saving within the community. We have two types of groups: FHH groups and mixed household groups – in 7-8 months they can save up to 30.000 Birr for themselves in the group, we provide trainings on them why they can save and how they can save, how they can use, how they can take loan. They can save first and then they can provide also loan to their members. Within one project we have more than 300 groups. This year 24 groups saved more than 100.000 Birr and after one year they can share out.

Seasonality of vegetable production: actually it is impossible to stop producing vegetables, this year very few rain, only 2-3 times, very drought area, so they are rather on other activities than producing vegetables. They all produce the same at the same time, like tomato this year. And once the price for onion is high they all produce onion, so the price is gets really low again.

You try to help/train the farmers with that issue?

Yes, we do. In terms of irrigation there is a change, the poorest of the poor get better now, they built houses, they purchase donkey, animals…change is visible but not enough.

In terms of women there is no difficulty. The main difficulty is to make the women joining the trainings. Sometimes the men come to the training on behalf of their wife to take the input, which should be for them, as small animals like goats, sheep and seed. It´s difficult to get the women here and make them talking about their problems.

Do you provide trainings at their villages or do you make them coming here?

No, not the whole community is expected to come here. We only train the committees of the communities.

How many women are in these committees?

They are all women! They join and then go back to work.

Is it because the women are afraid of going or are they not allowed to go?

Both (Big laughing) sometimes they are afraid of their husbands.

We observed a lot of waste of vegetables, the brokers decide on what to use of the vegetables. And what about value addition, because this is important about a value chain to add value on the products?

The brokers take their cars to the farmers and they have their own workers to select the vegetables they want. The farmers are not able to get their own vegetables to the market because they lack transport facilities.

There is in insufficient food and product ethics here. There is a lot of money a lot of nice products, but when they enter the market, there are been trashed. The products are packed as hell on each other, squeezed, smashed, all the perishable good. So what´s going on here? It's a big problem. Horrible.

Who are the donors of the organization? How do you finance yourself?

Answer: Mainly by Caritas and also by USAID, all foreign donors

What kind of difficulties you face of being an NGO in terms of financing yourself?

Did you observe any health problems related to the usage of chemical fertilizers or pesticides? Or the usage of food which has been treated with that?

We are not promoting chemical fertilizers, if it happens we train them how to use it, safety trainings, with gloves, masks etc. But we only promote organic stuff only. We train them how to make compost and how to use this as fertilizer.

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03-09-15

Tomato Broker

Daout, male, 30 years

Job situation: Middleman between farmer and trader, gets commission from both, as well as from the truck driver. Driver pays the highest part of his commission. Driver transports vegetables from the farm to the market. No female drivers. He earns 250-300 Birr/day.

Education: finished 5th grade