UNIVERSITÄT LEIPZIG
Global and European Studies Institute

Sommersemester 2016
Erstprüfer: Prof. Dr. Georg Vobruba
Zweitprüferin: Dr. Kathleen Hermans

Leipzig, den 18. August 2016

Masterarbeit

Exploring the Role of Droughts in Human Migration in Ethiopia. A Case Study in South Wollo, Northern Ethiopia

Vorgelegt von: Lisa Garbe
Zweinaundorfer Straße 11
04318 Leipzig
lisamarie.garbe@gmail.com
Matrikelnummer: 3436510

Erklärung

Ich versichere hiermit, dass ich die vorliegende Arbeit selbstständig verfasst habe und keine anderen als die im Literaturverzeichnis angegebenen Quellen benutzt habe. Alle Stellen, die wörtlich oder sinngemäß aus veröffentlichten oder noch nicht veröffentlichten Quellen entnommen sind, sind als solche kenntlich gemacht. Die Abbildungen und Tabellen in dieser Arbeit sind von mir selbst erstellt worden oder mit einem entsprechenden Quellennachweis versehen. Diese Arbeit ist in gleicher oder ähnlicher Form noch bei keiner anderen Prüfungsbehörde eingereicht worden.

Leipzig, den 18.08.2016 _____

Lisa Garbe

Acknowledgement

I would first like to thank my supervisor Dr. Kathleen Hermans of the Hemholtz Centre for Environemental Research in Leipzig for all the fruitful discussions and valuable support while planning, running and writing the study. I am also grateful to Prof. Dr. Georg Vobruba of the Institute for Sociology at the University of Leipzig, who consistently allowed this paper to be my own work, but who had an open door when I had a question about my research and writing.

I would further like to thank the International Water Management Institute (IMWI) in Addis Ababa and particularly Dr. Amare Haileslassie for supporting the preparation of the field research. Besides, I am deeply grateful to Alemayehu Tafesse, Asefa Belay Erega, Solomon Birhan Meskel, and Tesfaye, without whom I could have not realized the field work.

I would also like to thank Theo Toppe for statistical advice and constructive criticism on conceptualization and analysis of this thesis and Sarah Peoples for linguistic review.

Finally, I would like to thank all farmers from Abasokotu and Guguftu for sharing their personal experiences with me.

Table of Contents

List of Figures

List of Tables

List of Abbreviations

A.S.L.	Above Sea Level
DA	Development Agent
EM	Environmental Migration
EPRDF	Ethiopian People's Revolutionary Democratic Front
FGD	Focus Group Discussions
IDMC	Internal Displacement Monitoring Centre
IDP	Internally Displaced Person
IOM	International Organization for Migration
IPCC	Intergovernmental Panel on Climate Change
NPP	Net Primary Production
PRA	Participatory Rural Appraisal
PSNP	Productive Safety Net Programme
SLA	Sustainable Livelihood Approach

1 Introduction

> "The humanitarian impact of El Niño is clear […] that some 11 million children are at risk from hunger, disease and water shortages as a direct result of the extreme weather, with drought-stricken Ethiopia the worst affected" (Allison 2016)

The drought in Ethiopia in 2015 has caused severe crop failures especially in north eastern parts of the country. International organizations claim it to be "the worst drought in decades" (OCHA 2015) and figure that the "food security situation has sharply deteriorated" (FAO 2015). However, long-term consequences of the 2015 drought in Ethiopia remain unclear, especially since the frequency and occurrence of rainfall variability and related droughts have increased over the past decades (Bewket 2009, 823).

In the 1990s the Intergovernmental Panel on Climate Change (IPCC) stated in its first assessment report that "the gravest effects of climate change may be those on human migration as millions will be displaced" (cited after Piguet, Pécoud, and de Guchteneire 2011, 5) and Norman Myers claimed that 150 million people will leave their home by 2050 due to climate change (Myers 1993: 758). Although these scenarios paint a rather bleak picture of future migration flows, there is little research on mechanisms of the environment-migration nexus, as well as the scope of concerned areas. This is generally a result of a lack of "empirical evidence that specifically documents how environmental change affects migration dynamics" (Jónsson 2010, 7).

The intention of this master's thesis is therefore to contribute to closing this scientific gap by carrying out a case study in South Wollo, north eastern Ethiopia. This region is well known for increasing rainfall variability and increasing population density that "places additional stress on local natural resources" (Hermans n.d., 1). The drought in 2015 was a vivid example of climate events in this region where droughts have been a frequent problem in the past. According to the *Joint Government and Humanitarian Partners' Document* the drought has led to excessive livestock sales, migration and severe food shortages (Eziakonwa-Onochie et al. 2016, 42).

Together with Dr. Kathleen Hermans I have conducted a household survey covering 315 households and eight focus group discussions in two villages (*kebeles*) in Dessie Zuria, South Wollo. I will evaluate rural farmers' livelihoods, effects and impacts of the 2015 drought on their livelihoods, as well as migration as a possible adaptation strategy. A com-

parison between the *kebeles* serves to understand the influence of different location-specific factors.

In the following, I will start with the theoretical context. After providing an overview of the emergence of the environmental migration concept, I will explain the conceptual difficulties and point to the need for interdisciplinary research. I will then explain the conceptual framework for my survey making use of the sustainable livelihoods approach by Scoones (2015) and derive research questions from theoretical and conceptual findings for the analysis. I will then provide more specific information about research on rural development and migration in Ethiopia highlighting regional specificities in the highlands in chapter three. In the fourth chapter I will refer to the methodology explaining site selection, sample, and the mixed methods approach that includes a quantitative household survey, as well as qualitative focus group discussions. The fifth chapter provides an overview of the study region based on information from local authorities. Then I will analyse the existing data in chapter six followed by a discussion and a conclusion in chapter seven and eight.

2 Theory

2.1 Research on Environmental Migration

> "You think migration is a challenge to Europe today because of extremism, wait until you see what happens when there's an absence of water, an absence of food, or one tribe fighting against another for mere survival." (John Kerry 2015)

With his statement from the GLACIER conference in Alaska, John Kerry points to one of the most pressing issues in current migration policies. But while policy makers and media are increasingly referring to "how climate change is behind the surge of migrants to Europe" (Baker 2016) and thus becoming "another long-term threat" (Bawden 2016) empirical research on this topic remains scarce and rather controversial.

2.1.1 Environmental Migration: A Controversial Notion

When reviewing the literature on environmental change and human migration, a reference to the concept of "environmental refugees"[1] from El-Hinnawi in 1985 is often made as a starting point. Although the term "refugee" focuses on forced migration, El-Hinnawi's report has stimulated a broader debate about linkages between environmental changes and human migration. Shortly after, the environment-migration nexus was largely brought up in the first assessment report of the IPCC. Ever since, human migration has been discussed in the IPCC reports as possible "response[s] to both extreme weather events and longer-term climate variability and change" (IPCC 2014, 20). Along with the first report, other environmentalists shared the IPCC's concern in the 1990s; I will give a brief overview of the academic dispute between Myers and Black who "represent opposing positions in an academic and political debate that started in the mid-1980s" (Castles 2002, 2).

Norman Myers, a British environmentalist, made waves announcing concrete numbers of people to be displaced because of "drought, soil erosion, desertification, deforestation and other environmental problems" (Myers 1997: 167). Accordingly, environmental migration

[1] The term "environmental refugee" was popularized in 1985 as title of a United Nations Environmental Programme (UNEP) report by Essam El-Hinnawi, who provided the first definition of the term: "those people who have been forced to leave their traditional habitat, temporarily or permanently, because of a marked environmental disruption (natural and/or triggered by people) that jeopardized their existence and/or seriously affected the quality of their life [sic]" (El-Hinnawi 1985: 4).

(EM)[2] "promises to rank as one of the foremost crises of our times" (Myers 1997: 175). In *Environmental Exodus*, Myers and Kent (1995) analyse the scope of environmental pressures that can cause migration at a global scale. They take a closer look at different factors such as deforestation, landlessness, desertification, soil erosion, salinization, droughts and other stressing factors. They come to the conclusion that "impelling factors behind environmental refugees are multi-faceted, complex, and always working in some combination or other" (Myers and Kent 1995). Based on this assumption they make vulnerability assessments for large parts of the world. By aggregating macro data for different countries, they draw a conclusion of how many people may be displaced partly due to environmental reasons. Myers (1993) suggests that around 150m people will be displaced by 2050 partly due to environmental reasons equalling 1,5% of the projected population of 10 billion at that time (Myers 1993, 758). According to Myers (1997), the sub-Saharan continent will be particularly affected as the "region already features half of all refugees" (Myers 1997, 174). Although other scholars have predicted future migration flows as well (Jacobson 1988; Milan 2004; Westing 1992), Myers's figures remain the most frequently cited. Several reports have based their predictions of future EM flows on his studies (Christian Aid 2007; Stern 2007).[3] As the concept of EM became increasingly popular, Myer's numbers "became the most influential and controversial figures discussed in public debates" (Gemenne 2011b, 542).

While the "well-known media appetite for numbers" (Gemenne 2011a, 232) was fed by the large-scale study from Myers and Kent (1995), their results attracted large criticism in academia. Black (2001) argued that although environmental changes may have a severe impact on peoples' livelihoods, the "conceptualization [of environmental reasons] as a primary cause of forced displacement is unhelpful and unsound intellectually, and unnecessary in practical terms" (Black 2001, 1). Black (2001) revised literature on EM which, according to him, is "evidence that is far from convincing" (Black 2001, 3). He states that the mere discovery of migration in places with environmental degradation is not enough to proof a causal link, which leads him to the conclusion that "academic and policy writing on

[2] In the following, I will use the term environmental migration (EM) to refer to the vague phenomenon of human migration partly caused by environmental changes. However, this term shall represent all terms that have been made in this branch of research so far, ranging from "climate refugee" to "environmentally displaced person". Although I acknowledge that these terms might be built upon slightly different conceptual ideas they all share the common idea of human migration as a direct or indirect result of environmental change and climate change.

[3] E.g., the report *Stern Review* released for the British government as well as the report *Human Tide* by the British development Christian Aid refer to the Myer's estimates about environmental migrants.

'environmental refugees' has more to do with bureaucratic agendas of international organizations and academics than with any real theoretical or empirical insight" (Black 2001, 14). Many scholars agreed that the predictions of future EM flows was an "oversimplification" (Gemenne 2011a, 232) and did not reflect numbers of people that had *actually* been displaced due to environmental reasons (Castles 2002, 3).

Emerging literature on EM since the early 1990s also reflects the political dimension of the topic. As Piguet et al. (2011) state "research and statements regarding the climate change-migration nexus are very hard to dissociate from the highly politicised debate on climate change itself" (E. Piguet, Pécoud, and de Guchteneire 2011, 6). There has been an ongoing debate about the securitization[4] of the environment and thus security concerns about the consequences of EM. Patricia Saunders (2000) has noted that "the discussion of the term, 'environmental refugees', grew out of concerns about security, which can be defined in this instance as an interest in maintaining American (or 'Western') geopolitical ascendancy" (cited after Nicholson 2011, 9). Saunders argues that especially after the end of the cold war, scholars in security studies were looking for new analytical frameworks. In this sense, some scholars have emphasized the influence of environmental changes and resulting migration on conflicts (Homer-Dixon 1994; Jacobson 1988). Castles states that "if environmental factors lead to refugee flows this would be a powerful reason for the 'international community' to take pre-emptive action" (Castles 2002, 6).

The academic dispute between Myers, Black and other scholars has illustrated that the linkage between migration and environment is not a given fact but a complex nexus with ambiguous scientific approaches and results. Its political dimension demonstrates the need for cautiousness in dealing with EM. In the next section I will point more specifically to the conceptualization of EM.

2.1.2 Conceptual Challenges

As the dispute between Myers, Black and other scholars has demonstrated, the environment-migration-nexus has not produced any consensus on the causal relationship between environmental changes and human migration, but rather illustrated its complexity and the need to overcome simplifications: „*To say that the environment affects migration is a truism"* (Nicholson 2011, 7; italic in original). When analysing the environment-migration

[4] The term "securitization" emerged in the 1990s in the Copenhagen School and refers to an extreme politicization of formerly non-political issues that may justify the use of extraordinary means in the name of security (Buzan, Wæver, and de Wilde 1998).

nexus, there are two main conceptual difficulties to keep in mind. I will use two frequently cited definitions of *Environmental Refugees* and *Environmental Migrants (EM)* to illustrate conceptual difficulties.

Firstly, previous definitions of EM are broad and fail to specify *what* precisely the object of investigation is. According to Suhrke (1993), "broad categorizations invite large numbers [so that] the estimates of environmental refugees ran into the millions" (Suhrke 1993, 6). As indicated in chapter 2.1.1., this lack of definitional precision concerns both migration and environmental changes. The first actual definition of EM, made by El-Hinnawi, stated that environmental refugees are:

> "Those people who have been forced to leave their traditional habitat, temporarily or permanently, because of a marked environmental disruption (natural and/or triggered by people) that jeopardized their existence and/or seriously affected the quality of their life [sic]" (El-Hinnawi 1985: 4).

El-Hinnawi's definition remains vague and includes both internal and international migrants, as well as all kinds of environmental changes, and thus attracted large criticism.[5] The later definition by the International Organization for Migration (IOM) is already more comprehensive:

> "Environmental migrants are persons or groups of persons who, for compelling reasons of sudden or progressive changes in the environment that adversely affect their lives or living conditions, are obliged to leave their habitual homes, or choose to do so, either temporarily or permanently, and who move either within their country or abroad". (IOM 2007: 1)

This definition by the IOM makes a difference between "sudden" and "progressive" environmental changes and internal, as well as international migration. However, there are still imprecisions in defining different types of 'migration' and 'environmental changes'. There is no distinction between different functions of migration, such as temporary labour migration to support the household or long-term and permanent migration to relieve the household. With regards to environmental changes it remains unclear whether 'changes' refer to climate change induced environmental changes or land use pressures. Often, scholars tend to mix different notions like environment and climate, without analytically separating them

[5] Bates (2002) claims that El Hinnawi "did not provide generic criteria distinguishing environmental refugees from other types of migrants, nor did he specify differences between types of environmental refugees. His definition makes no distinction between refugees who flee volcanic eruptions and those who gradually leave their homes as soil quality declines" (ibid., 466).

from each other. As Jónsson states, "in contrast to the environment, which is something that directly affects people, 'the climate' is much more abstract: it encompasses the statistics of numerous meteorological elements in a given region over long periods of time (usually 30 years)" (Jónsson 2010, 4). A lot of environmental changes cannot be simply attributed to climate change, but are dependent on many factors like misguided development strategies or unequal distribution of resources. Particularly in the Sahel, where droughts and related famines have a long history, climatic changes cannot be the sole explanation. In the case of Myer's forecasts "the estimate does not distinguish between different types of environmental changes as migration drivers, and includes development projects amongst these" (Gemenne 2011, 543).

Secondly, current definitions do not illustrate the causality of *how* environmental changes influence migration. Often, the evidence that is presented to show a causal link for migration as a result of environmental changes is the mere existence of migration in places with environmental changes. However, especially when having the political dimension of EM in mind it becomes evident why a comprehension of causal mechanisms is needed: "Policy is always elaborated with specific applications and relevancies in mind" (Nicholson 2011, 7). The research on EM should aim at building "predictive future scenarios regarding the provenance and number of 'environmental migrants'" on the one hand and "construct legal and normative frameworks for structuring institutional and governmental responses" (ibid.) on the other hand. In order to enable policy makers to appropriately address EM, the mechanisms of EM need to be evidently demonstrated. The complexity of migration as a multi-causal phenomenon "make[s] it difficult to identify a precise and rigorous number of environmentally displaced persons" (Gemenne 2011b, 546). Consequently, it becomes even more important to focus on causal links between environmental changes and migration. Therefore, it is important to shed light on the interaction between environmental and other influencing factors like the role of the state and governmental institutions. What can climate change be really blamed for and what may be the result from poor governance? As Castles (2002) indicates, the core problem may not be environmental change itself, but the ability of authorities to deal with it: "this points to the important role of the state: a strong, efficient state can deal with environmental problems much better than a weak and possibly corrupt state" (Castles 2002, 4). This also points to the need to clearly distinguish between the influence of merely economic drivers and those indirectly or directly shaped by environmental drivers.

Previous deficiencies in conceptualizing EM show the need for clear definitions and suitable operationalization. I will briefly point to some implications in the next section.

2.1.3 Lessons Learned: The Need for Interdisciplinary Approaches

A review of existing literature and a critical reflection of previous definitions, as mentioned in chapter 2.1.2, have brought out several implications for the following analysis. In the following, I will briefly point to these implications that include the need for interdisciplinary research, the need for empirical work, and a clear definition of the different terms.

Firstly, there is a strong need for interdisciplinary research. As the debate in the 1990s between environmental and social scientists has illustrated, migration is a multi-causal phenomenon and requires a holistic investigation of different patterns. It is important to keep in mind that the decision to migrate is most likely a result of multiple reasons. There has already been a shift in academia and "on the whole, most scholars now dismiss the apocalyptic predictions that used to influence debates" (E. Piguet, Pécoud, and de Guchteneire 2011, 5).

Secondly, there is a consensus on the lack of empirical work that needs to be done for further understanding of EM's complexity (Gemenne 2011a; Hunter, Luna, and Norton 2015; Jónsson 2010). It is therefore fundamental that research on the environment-migration nexus focuses on actual dynamics of this relationship to achieve an operable understanding for causal mechanisms. Hence, the one of the first objectives for research on EM should rather be to uncover the mechanisms of EM than to come up with concrete numbers at a macro level, as this "has not been demonstrated to have any 'truth- value' and thus has no operability" (Nicholson 2011, 6).

Thirdly, for the analysis it is important to clearly define what different terms, such as environmental change and migration, refer to. Are environmental changes related to climate change most relevant, and if so, what specific consequences of climate change are relevant for the public? Or is it necessary to look at environmental changes more generally, including changes influenced by social and political factors? When looking at migration processes, should the focus be on temporal aspects like short-term or long-term migration or rather on a spatial dimension of people's movements? The more that specific research questions and hypotheses are defined, the more comprehensive the analysis can be. In this sense, the regional and local context plays an important role to give analytical categories a more precise meaning.

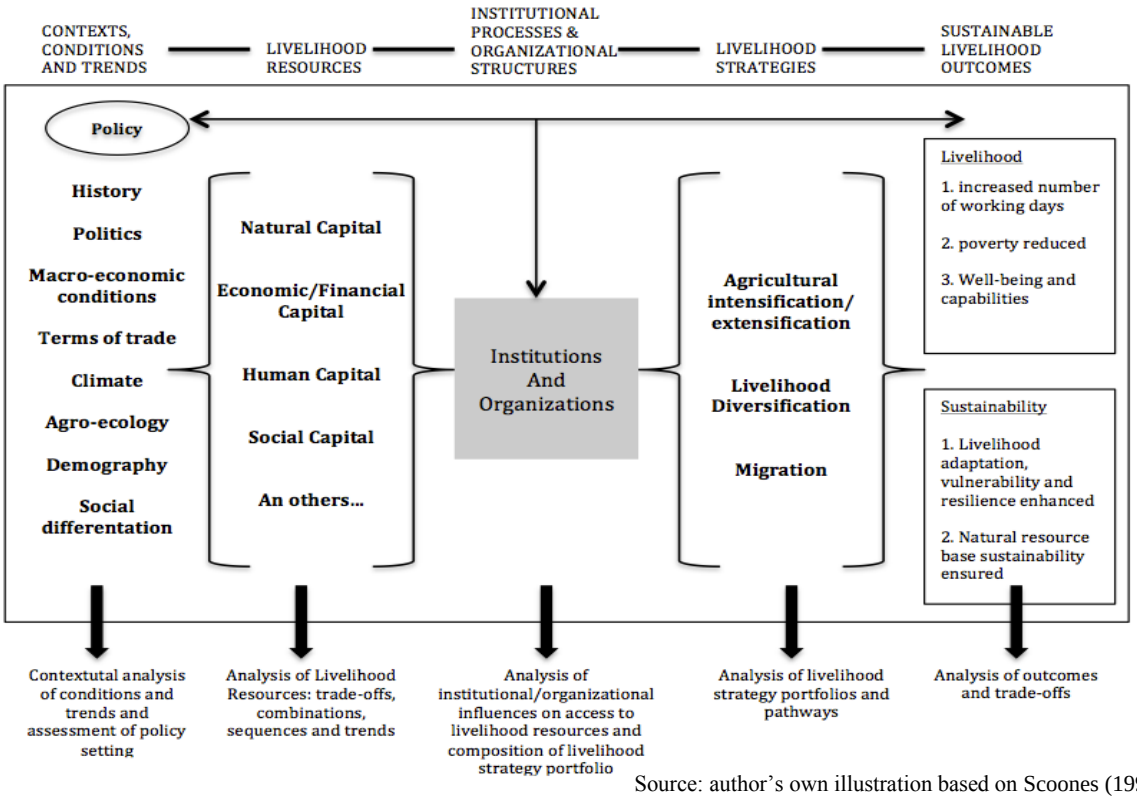
2.2 Conceptualisation

2.2.1 The Sustainable Livelihood Approach

> "The day-to-day practice of different people reveal the ways we adapt to environmental change, always experimenting and innovating" (Scoones 2015, 67)

In order to understand the impact of climate change and related environmental changes on farmers' lives, we need to comprehend their dependence on different resources (such as crops, livestock or other), as well as the socio-economic and political environments. The Sustainable Livelihood Approach (SLA) offers a comprehensive framework for the analysis (see Figure 1). According to Chambers and Conway (1991) a livelihood "comprises the capabilities, assets (including both material and social resources) and activities required for a means of living" (Chambers and Conway 1991, 6). This approach, largely popularized during the 1990s, was motivated "by the need to develop more effective poverty alleviation policies" (De Haan 2012, 346). With the SLA, researchers first tried to shift the focus from top-down approaches to poverty reduction based on macro-economic indicators, then to bottom-up approaches analysing how people organize their lives at the micro level. The very idea of the SLA was that poverty cannot be understood as a sole matter of income or material well-being, but rather needs to be seen as a multidimensional phenomenon (De Haan 2012, 348).

Figure 1: Sustainable Livelihoods Approach (Scoones 1998)



Source: author's own illustration based on Scoones (1998)

Livelihood approaches focused particularly on people living in rural areas because "today, global poverty remains a significantly rural phenomenon with rural populations comprising three quarters of the world's poor" (Scoones 2015, xiii). In order to live up to the complexity of rural livelihoods, Scoones emphasized that it is important to understand rural livelihoods "in terms of a diverse array of strategies, farming being only one of many, differentiated across and within households" (Scoones 2015, 12).

With "the rising toll of today's climate-related disasters" (IUCN et al. 2004, v), researchers shifted their focus toward the livelihoods' vulnerability to environmental and climate change and their ability to cope with such changes: "This puts livelihoods at the heart of dynamic systems, involving changing external pressures – whether long-term stresses or more sudden episodic shocks" (Scoones 2015, 61). Before, the aspect of livelihoods' sustainability was often overridden by the prevailing focus on immediate needs and poverty reduction. Chambers and Conway's (1991) definition laid the foundations for SLA:

> "A livelihood is sustainable when it can cope with and recover from stress and shocks, maintain or enhance its capabilities and assets, and provide sustainable livelihood opportunities for the next generation" (Chambers and Conway 1991, 6).

Based on this definition several papers have investigated how livelihoods are constrained by climate change and environmental stress and which coping strategies farmers have developed.[6] Most scholars have artificially divided farmers' coping strategies between "more short-term and immediate adaptive responses and long-term mitigation" (Scoones 2015, 62). Although the reality is much more complex with climate change being a long-term process that increases the occurrence of selective 'shocks' like droughts or floods, this artificial divide makes sense for the analysis of rural livelihoods; it points to the difference between adaptation to long-term changes, such as soil degradation, and strategies to react to sudden environmental 'shocks', such as droughts or floods.

Furthermore, there has been an on-going discussion about what the central object of analysis in livelihood research should be: "What is more important? What people actually do or the factors that constrain or enable their actions?" (Scoones 2015, 37). While the answer is most likely neither, this question points to the complexity of SLA to "make the links from

[6] Scholars have focused on conceptual approaches (Morton 2007) and reviewed present-day adaptation (Adger et al. 2003) at the global scale. Studies on sub-Saharan Africa and the Sahel have developed tools to characterize climate change impact on agriculture (Cooper et al. 2008) and the role of perception of climatic change (Mertz et al. 2009).

the micro-situated particularities of poor people's livelihoods to wider-level institutional and policy framings at district, provincial, national and even international level" (Scoones 2015, 38).

2.2.2 Including the Migration Dimension

What role does migration play compared to other livelihood strategies? Is migration an integral part of rural livelihoods or rather a strategy to respond to constraints in livelihood? These and other questions come up when incorporating migration into the SLA. I will briefly point to some thoughts I consider to be important for the analysis.

One major question about the relationship between migration and sustainable livelihoods that researchers are concerned with is about possible benefits of migration. Is migration a desperate escape from rural poverty or just one strategy among others to secure the household's livelihood? McDowell and De Haan (1997) have underlined that migration – usually seen as the opposite of sedentary patterns as the norm – is "often the rule, rather than the exception" (Mcdowell and Haan 1997, 1). Apparently, research has neglected the 'normal' in migration processes for a long time. Sharp et al. (1991) reveal an interest in differentiating between **negative** 'distress' migration and **positive** 'livelihood' migration in terms of facilitating or constraining livelihood security" (cited after Mcdowell and Haan 1997, 10). The outcome of migration as either positive or negative may be simplified, but helps us to understand migration's effect on the concerned households.

Another important aspect concerns the rationality of migration decisions. Early research on migration in developing countries has constituted the decision to migrate to be rationally motivated (Todaro 1969). Todaro (1969) highlights the role of the individual in making the decision to migrate based on economic self-interest. In the 1990s, Stark (1991) generally stuck to the idea of rational choice for migration decisions, but neglected the focus on the individual. Rather, he argued that migration decisions are taken in the context of the family or the household. Marxist and structuralist approaches suggest that institutions play a crucial role in shaping migration decisions. Prothero and Chapman (1985) discuss the effect of capitalism on rural livelihoods leaving "no other option than to participate in a system of migrant labour to satisfy minimal needs" (Prothero and Chapman 1985, 22).

Especially with regards to environmental stress, there have been interdisciplinary approaches highlighting both environmental factors and non-environmental (including institutional as well as individual) factors. Black et al. (2011) suggest to keep the focus on

"drivers of migration in general […] and how these may be affected by environmental change" (Black et al. 2011, 54).

2.3 Deriving Research Questions

The character of this thesis is explorative and the goal is to better understand the influence of droughts on migration in Ethiopia at the household level. As the findings from literature have suggested, research on EM needs to evidently demonstrate *if* and *how* environmental changes influence migration decisions. Therefore, research at the micro level is essential to include location-specific factors. As the SLA has demonstrated, farming is only one among various livelihood strategies and needs to be put into a broader context. If we want to understand why people decide to migrate rather than staying in their place of origin, we need to investigate 1. what their main livelihood sources include, 2. how resistant they are to environmental changes and 3. what role migration plays in this context.

In order to approach the first question, livelihood needs to be analysed in a detailed manner. It is important to capture the livelihood context of the respondents well, including different aspects of livelihood, such as farming and non-farming activities, as well as institutional influences like food aid programmes. This holistic point-of-view enables us to understand how both income-generating activities like daily labour and non-income generating activities like subsistence farming contribute to peoples' livelihood.

In order to approach the second question, the environmental changes discussed in this thesis need to be clear. Some environmental changes, such as soil degradation and soil erosion, cannot only be attributed to climate change, but are also dependent on land-use practices. Other environmental changes, such as frequently occurring droughts and increasing rainfall variability can be directly linked to climate change. In the case of South Wollo, long-term changes like soil degradation and nutrient depletion, as well as frequently occurring droughts and increasing rainfall variability, are core challenges (see chapter 5). The drought from 2015 shall be at the very center of the analysis. As the drought had occurred on the verge of the current study's data collection and its impact was still on-going, it is a suitable point of reference. For the respondents, the impact of the drought was still tangible and the effects were easy to remember. The analysis also needs to clearly divide between livelihood strategies (and migration as one of them) that can be attributed to the drought and strategies that may result from different influences.

Thirdly, the definition of migration needs to be clear. Both internal and international migration are prevalent themes in Ethiopia (see chapter 3).[7] Due to the fact that there is little knowledge on migration processes in Ethiopia in terms of official numbers and figures, and even less on environmentally induced migration, an explorative approach is needed. As outlined in the next chapter the results from former studies are not consistent and do not provide enough knowledge for hypotheses. Rather, former studies have illustrated that migration processes – and EM in particular – are dependent on various location-specific factors. Consequently, different environmental, socio-economic, and political factors need to be taken into account. The analysis shall discover which different types of out-migration exist and how they can be linked to the 2015 drought in Ethiopia. However, to understand the causal link between the 2015 drought and migration, it is important to gain a broad picture of on-going out-migration processes. Besides temporal and spatial aspects of migration, it is important to investigate the function of migration and the reasons that the respondents themselves consider to be prevailing. Farmers' assessment of migration and whether migration is negatively or positively connoted for them may help to understand the effect of migration for the household.

The research questions are:

Livelihood Resources

1) What are the main livelihood resources that farmers are using?

2) How did the livelihood resources change over the past 5 years?

Drought in 2015

3) How did the 2015 drought in Ethiopia affect farmers' livelihoods?

4) What household strategies were applied to cope with the drought from 2015?

5) What role did out-migration play in the context of the 2015 drought?

[7] This study only examines migration processes of people who leave their *kebele* and does not consider people who move in to the *kebele* from somewhere else. While the term *out-migration* is rather used to describe migration within a country, the term *emigration* is mainly used for international migration processes. However, there is no clear distinction between both terms. In the following, I will only use the term out-migration to describe the process of leaving the *kebele* and move to either another destination within or out of Ethiopia.

Migration

6) Is out-migration a relevant livelihood strategy in the kebeles?

7) What are the spatial (rural/urban/internal/international) and temporal (short-term/long-term/permanent) characteristics of out-migration?

8) What reasons do farmers attribute to out-migration?

9) How do farmers perceive out-migration?

3 The Ethiopian Context

> "Agriculture is the source of livelihood to the overwhelming majority of Ethiopia's population. It employs over 80% of the labour force and contributes ~45% to the national GDP, on average." (Bewket 2009, 823)

Ethiopian agriculture is characterized by a strong dependency on rainfall, little use of modern technology, and low outputs (Bewket 2009, 823). Agriculture is the most important source of the Ethiopian economy and the Achilles heel of most Ethiopians. Farmers living from subsistence farming are highly vulnerable to environmental factors. Recent droughts, floods and the outbreak of diseases in northern Ethiopia remind us "how food and water security and rural livelihood strategies are still largely dependent on the climate system and vulnerable to its seasonal variability and long term changes" (Adem 2011, 2).

In order to understand migration as a possible adaptation strategy of farmers living in rural Ethiopia, it is important to examine major obstacles to rural development. In the following, I will give an overview of the key challenges to development in rural areas of Ethiopia with a particular emphasis on the highlands. This shall help the reader to understand what the environmental and non-environmental factors are that impair the life in rural areas, and might therefore influence farmers' decision to migrate. Subsequently, I will review existing literature on migration processes in Ethiopia.

3.1.1 Key Challenges to Rural Development

3.1.1.1 Rainfall Change and Variability

In rural Ethiopia, rain-fed agriculture is the most common farming strategy (Rosell 2011, 329). Several studies have examined the impact of rainfall changes and variability on smallholders' livelihoods. Demeke et al. (2004) constitute the relation between rainfall variability and production at a national level. As shown in their analysis, major droughts in the past have always coincided with a decline in production (Demeke, Guta, and Ferede 2004, 28). Von Braun (1991), who has analysed different national statistics, documented that "a 10 percent decline in rainfall below the long-term average results in a 4.4 percent fall in national production in Ethiopia" (Braun 1991). Droughts and floods are not new occurrences in Ethiopia and the country has experienced at least five major national droughts since the 1980s (World Bank 2009, 1). However, the frequency of droughts has increased in many parts of the country provoking a loss of livelihoods (Bewket 2009; Funk et al. 2012; Rahmato 1991; World Bank 2011).

In Ethiopia, there are two cropping seasons. The main cropping season is the longer *meher* season (using *kiremt* rains) between June and September accounting for over 95 percent of the total cereal production in Ethiopia (Taffesse, Dorosh, and Asrat 2012). The second cropping season, the *belg* season (using *belg* rains), is only used by smallholders, and yields are much smaller than from *meher* season (ibid.). However, *belg* rains have found to be particularly important in the highlands (Rosell 2011, 330).

In a quantitative study, Bewket (2009) examines the correlation between rainfall variability and cereal production at the regional level, carrying out a case study in Amhara region. While the production of teff[8], barley and wheat is linked to *meher* rainfall, the production of sorghum is more closely related to *belg* rainfall. Bewket (2009) concludes that "the fact that there are high correlations between cereal production and rainfall in the region suggest that farmers are vulnerable to food-insecurity related to rainfall variability" (Bewket 2009, 834). Also, Gray and Mueller suggest that droughts can be a "negative shock that can undermine livelihoods and well-being" (Gray and Mueller 2012, 1).

3.1.1.2 Land Degradation

Due to difficult climatic conditions in Ethiopia, like rainfall variability, aridity, and human land use pressures, the country has been subject to different environmental problems like erosion and soil loss (Demeke, Guta, and Ferede 2004, 29). Especially Ethiopian highlands located at 1500 metres above sea level (a.s.l.) or higher are said to be "one of the most severely degraded lands in Africa" (ibid.). Different processes of land degradation can be described as "progressive deterioration of biological (flora and fauna) and physical (soil, water, micro-climate, etc.) resources of the land, leading to declining productivity and unsustainable yields" (Lemenih 2004, 1).

These changes are partly the outcome of climatic patterns and partly the consequence of changes in land use. According to Lemenih (2004), two of the most severe consequences of changes in land use include increasing soil erosion, the depletion of soil nutrient status, and a loss of primary tropical forests and biodiversity (2004, 2). Soil erosion and nutrient depletion are caused by increasing human population, excessive livestock population and deforestation, and have been accelerated by agricultural cultivation on steep slopes in the highlands (Taddese 2001, 815). Several authors state that deforestation coupled with incor-

[8] Teff is a cereal native to Ethiopia and Eritrea and the most important ingredient for *injera* – the national dish in Ethiopia.

rect land management is the root cause for excessive soil erosion in the Ethiopian highlands (Lemenih 2004; Nyssen et al. 2004; Tekle 1999). Reasons for a decline of forested areas include grazing, woodcutting and ploughing of the area in between different fields (Nyssen et al. 2004, 305). Consequently natural forest cover has declined from 40 percent to less than 3 percent (Lemenih 2004, 2).

3.1.1.3 Population Growth

With approximately 99m inhabitants, Ethiopia is the second most populous country in Africa and its annual population growth rate is with 2,89 percent; the 10th highest in the world (The World Factbook 2015). In the rather densely populated highland areas, the population growth puts additional pressure on local communities. The farmland size decreases with every new generation due to the land policy and related inheritance law (see 3.1.1.4). As Demeke et al. (2004) highlight, "about 39% of the farming households in the country cultivate less than 0.5 hectares and about 89% cultivate less than 2 hectares" (Demeke, Guta, and Ferede 2004, 30).

3.1.1.4 Agricultural Policy

Ethiopia's land and agricultural policy has been subject to various changes of government and associated political ideologies. This ranges from hierarchically organized land ownership during Haile Selassie's reign to a complete nationalization of land during the socialist government of *derg*. Since the beginning of the 1990s the Ethiopian People's Revolutionary Front (EPRDF) has slowly opened up for foreign investors. The history of agricultural policy in Ethiopia is complex and shall not be traced here in detail. However, I will briefly point to some of the main pillars the current land policy is built upon as well as recent changes.

Today's system of land tenure is rooted in the *derg's* agricultural policy. After EPRDF, a coalition of ethnic parties, had disempowered the *derg* in 1991, the new government declared to maintain the landownership system in its fundamental features.[9] This was mainly to ensure secured landownership for the peasantry.[10] Because of the nationalization, farm-

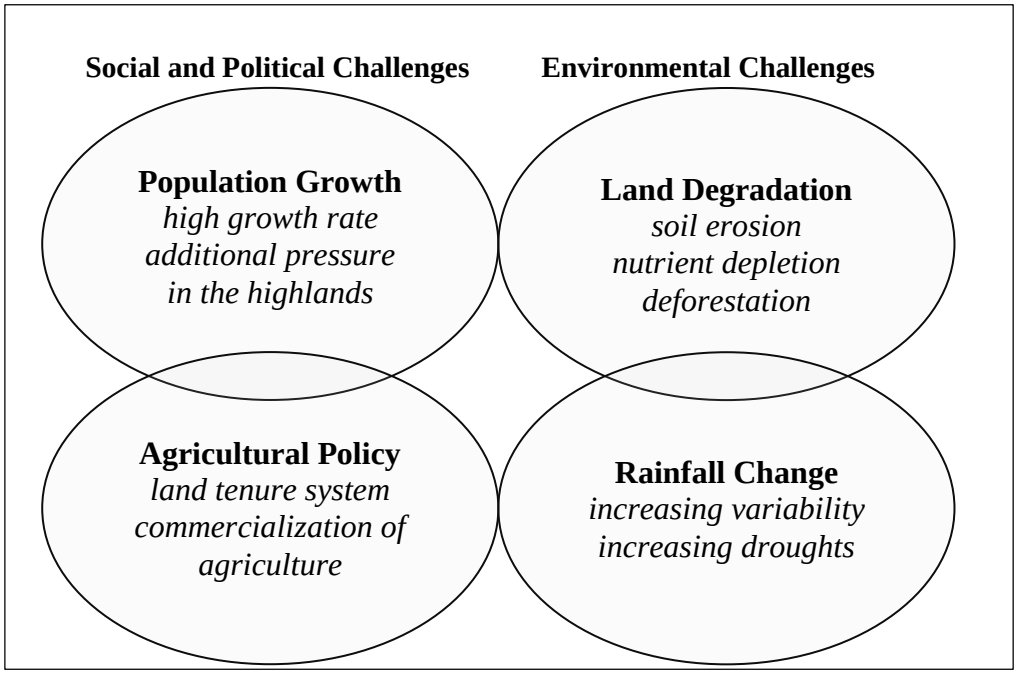
[9] Under the *derg* there had been a radical reform of land tenure in 1975: Land was completely nationalized and transformed to a community asset. Hence, the sale or lease of land was forbidden and private land ownership abolished (Brüne 1983, 125).

[10] In this sense, Meles Zenawi, the former prime minister stated at a conference: "we were convinced that liberalisation of the market in agricultural products had to be part of the solution, but we were not convinced that privatisation of land was the way forward. Instead we opted to ensure tenure security for the peasantry and introduce a long-term land lease system for commercial farmers" (Zenawi 2006).

ers can acquire land only via centrally organized redistributions (James William Morrissey 2013, 1503). In densely populated areas like in the northern highlands, all arable land is already distributed. That means that farmers only have access to inherited land within the family and thus "moving between villages or nearby areas is not an option" (Rosell 2011, 331).

In addition, different laws at the national level fostered the commercialization of agriculture and paved the way for international investors (Garbe 2013). In order to facilitate large investments in land, there have been several resettlement programmes by the government. Estimates suggest that more than 1m people have been resettled so far (Horne 2011, 38). Generally there has been a shift in power, strengthening the influence of agro-industrial corporations on agricultural policy and fostering farmers' dependency on the market. Makki (2012) estimates that between 37 and 50 of farmers are dependent on the market, most of them on chemical fertilizers and bank loans (Makki 2012, 91).

Figure 2: Key Challenges to Rural Development



Source: author's own illustration

3.1.2 Migration in Ethiopia

3.1.2.1 Research on Internal and International Migration

Generally, research on migration in Ethiopia encounters various empirical difficulties. Concerning internal migration, there is a lack of available and reliable data. According to the Internal Displacement Monitoring Centre (IDMC) (2009), the government has not made any attempts to estimate the number of internally displaced persons (IDPs). Similar problems account for international migration in Africa as "the flows are usually undocumented, the data incomplete and often out-dated" (Kefale and Mohammed 2015, 1). The 2007 *Population Census* and the 2013 *Inter-censal Population Survey Report* provide data on out-migration (Central Statistical Agency 2010, 2013). However, the data is only provided at the regional level and it is therefore difficult to draw conclusions for migration at *woreda* and *kebele* level.

Historically, there were major population movements as a consequence of the 1984 drought, with more than 600.000 people being resettled by the government (Ezra and Kiros 2001, 749). At the same time the former government severely restricted labour migration until its overthrow in 1991 (Kefale and Mohammed 2015, 2) and therefore slowed down urbanization processes (Blunch and Laderchi 2015, 4). During the post-revolutionary period internal and international migration became more important. This also led to an increasing research interest in migration processes in Ethiopia.

Recent research on international migration from Ethiopia has focused on migration to the Gulf and to Saudi Arabia in particular. Due to a political arrangement with the Saudi Arabian government, large numbers of Ethiopians moved to the Gulf for temporary labour stays.[11] According to Asnake and Mohammed (2015), this "experience has animated the quest for overseas work in much of the country" (Kefale and Mohammed 2015, 2). Labour migration to the Gulf and to South Africa has increased using regular and irregular channels (Kefale and Mohammed 2015, 15).

Also, internal migration became more relevant with the fall of the *derg* as the new government granted the freedom to move around within Ethiopia. Blunch and Laderchi (2015) claim that most internal migration results from the increasing attraction and importance of

[11] An arrangement between the between Ethiopia and Saudi Arabia facilitated labour migration of Ethiopians and led to mass migration of about 45 thousand Ethiopians per month (Kefale and Mohammed 2015, 2). Kefale and Mohammed (2015) labelled this phenomenon the "Saudi big bang" (ibid.).

urban centres and marriage-related movements (Blunch and Laderchi 2015, 4). According to the World Bank (2010), rural-urban migration has accelerated and the "urban population share is estimated to almost double from 16 percent in 2007 to 27 percent by 2035" (World Bank 2010, 6). Accordingly the large majority of migrants moving to urban centres searches for a job or leaves their place due to family reasons like marriage, divorce, or the death of spouse (World Bank 2010, 22). Increasing population pressure coupled with a high degree of plot fragmentation (see 3.1.1.4) are often regarded as "important push forces of rural-urban migration" (World Bank 2010, 23).

3.1.2.2 Research on Environmental Migration

As several scholars indicate, migration processes have intensified with the fall the *derg* and the newly formed government of EPRDF in 1991 (Blunch and Laderchi 2015; World Bank 2010). Although reliable data on both internal and international migration is scarce, different studies have pointed to an overall increase in migration. Research on the causes and consequences of migration is on the rise and a growing interest in the role of environmental changes and climate change as a cause of migration has developed.

Several authors have investigated *what* factors cause migration and *how* they interact. According to the findings from Meze-Hausken (2000) in Northern Tigray, the more strategies farmers had as a response to drought, the longer they remained in the village before moving somewhere else (Meze-Hausken 2000). Based on a survey of 104 migrants in Northern Tigray, Meze-Hausken examines different vulnerability factors that influence the decision to migrate. These factors include external factors, like the availability of water or the distance to firewood, as well as internal factors, such as the number of drought strategies. A correlation of total vulnerability with the months after a drought until the onset of migration shows that the level of vulnerability is not linked with the time of migration (Meze-Hausken 2000, 396). However, a look at the different factors in detail suggests that families with a higher number of strategies resist migration longer than the ones with only few strategies (ibid.).

Morrissey (2013) points out that environmental stress itself may not be interpreted as a migration driver but rather shapes migration "through its impact on [other] migration drivers" (James William Morrissey 2013, 1508). In more than 350 interviews with rural-urban migrants in the north eastern highlands the respondents elaborated on the conditions in the rural areas that motivated them to leave. He develops an effects-based framework of the rela-

tionship between environmental change and migration "by which non-environmental factors interact with environmental stress to shape mobility outcomes" (James William Morrissey 2013, 1506). The four effects include additive effects, enabling effects, vulnerability effects, and barrier effects. Interestingly, the role of the household appears to be less important in shaping mobility decisions than the role of the individual (James William Morrissey 2013, 1508).

Ezra (2001) has conducted a survey with 2000 households in the Northern highlands to investigate different reasons for out-migration in 40 peasant associations (the smallest administrative unit) with 20 classified as "less vulnerable" and 20 classified as "more vulnerable". His results demonstrate that a high vulnerability to food insecurity encourages out-migration whereas the main reasons indicated by the respondents were to assist other relatives or marriage. Although the drought did not appear to be a primary motive for the respondents, Ezra (2001) suggests that out-migration to support other relatives or for marriage reduces the number of household members and therefore relieves the household in times of drought.

Study results differ in their findings on *where* people from drought prone villages move. Gray and Mueller (2012) have quantitatively assessed drought-induced migration in the Ethiopian highlands. Their results from a longitudinal household survey over 10 years indicate that drought increases long distance and labour-related migration from men and reduces marriage-related movement from women (Gray and Mueller 2012, 142). On the one hand, Ezra (2001) discovered that "rural-rural migration is the most important type of internal migration in rural Ethiopia" (Ezra 2001, 767) and on the other hand, Morrissey (2008) states that "environmental change […] contributes, in a variety of ways, to encouraging migration out of rural areas" (James W. Morrissey 2008, 28).

4 Methodology

4.1 A Mixed Methods Approach

In order to answer the research question, I have decided to use a mixed methods approach using both data from a quantitative household survey and qualitative focus group discussions (FGD). During the data collection, when talking about migratory processes, I realized that the insight into causes of out-migration was highly limited. Therefore, I decided to complement the data from the quantitative survey with information from qualitative FGD. While the findings from the household survey illustrate the drought's impact on livelihoods and migration dynamics, the FGD give more detailed information on reasons for out-migration.

4.2 Site Selection and Sample

The site selection is the outcome of a multistage process. A first selection of several regions in Ethiopia was derived from a study by Hermans (n.d.) on hotspots of socio-ecological pressure in Ethiopia. Hermans (n.d.) identified regions within Ethiopia where high rainfall variability and land degradation coincides with high population densities. They analyse trends of net primary production[12] (NPP), rainfall variability, and population pressure at district level. In 43 districts, mainly located in the northern highlands, vulnerable NPP levels coincide with high rainfall variability and population pressure. They suggest "that [in these districts] the livelihood of the local population is at risk, and environment-induced migration is a likely response to that risk" (Hermans n.d., 6).

Among the identified districts South Wollo was selected as the best region for research in terms of security and accessibility. During a first field stay in November 2015, we met with several authorities at zonal and at *wereda* level to identify potential *kebeles* for the household survey. The selection criteria included the intensity of land degradation, climate variability and drought, cropping seasons, land interventions, and accessibility of the *kebeles*. We chose the *wereda* Dessie Zuria that was close to Dessie and could therefore easily be reached. According to the authorities, all *kebeles* ranked high in climate variability and were affected by the drought in 2015. However, the degree of land degradation and resulting livelihood strategies were said to differ widely among the *kebeles.* We identified

[12] According to Hermans (n.d.) NPP "is the amount of energy that is captured by plants during photosynthesis and is accumulated as biomass. In terrestrial ecosystems, NPP usually represents the mass of carbon captured per area per year" (Hermans n.d.).

the two *kebeles* Guguftu and Abasokotu for the household survey that will be presented in detail in the fifth chapter. In order to compare the situation of people living in the area, we chose two *kebeles* where the drought in 2015 had a different impact on farmers' livelihoods. Due to different preconditions (see chapter 5), such as altitude and cropping season, the extent of farmers' vulnerability to the drought differed between the two *kebeles.* This comparison makes it easier to understand what factors can intensify or mitigate the drought's impact.

The data collection took place in February and March 2016. In Abasokotu we conducted 156 interviews ($n_A=156$) and in Guguftu 159 ($n_G=159$) interviews. In both *kebeles*, development agents[13] (DA) were responsible for the selection of the interviewees. The selection of interviewees was based on a key to represent people from all income levels and all sub-*kebele* units used for other household surveys as well. The sample from the FGD comprises 64 farmers in total (n=64) with eight farmers per focus group and four FGD in each *kebele.*

4.3 Instruments

4.3.1 Household Survey

The household survey covers both information at household level and information at individual level. The survey was designed together with my supervisor Kathleen Hermans based on our knowledge of the region and the information from our first field stay in November 2015. While the questions at household level comprise general information about the situation of the household, crop yields and the households' livelihood, the individual questions deal with personal opinions on migration and political interventions.

The questionnaire is divided into thirteen sections (see appendix I). The first section, *Household, Respondent and Interviewer Information*, records basic information of interviewer, interviewee, and the interview. The second section, *Basic Individual Characteristics*, covers the individual information for each household member. Household members are only people currently living in the household. Family members who moved away permanently are not counted as household members, but are captured in the migration history section. The question about the main occupation is an open question, as it remained unclear

[13] Over the past couple of decades the government provided large subsidies for agricultural extension services. As part of this strategy the government installed around 60.000 development agents (DA) all over the countries. Their task is to provide agricultural expertise to the farmers by offering a range of services (Kelemu, Sime, and Hailu 2014, 151).

how important income sources other than farming are. The third section deals with *Land Use* and includes questions about the farmland, the cultivated products, the cropping season and the type of land being used. In the fourth section, *Livelihood Strategies*, the respondents give information about their main sources of income and how they may have changed over the past five years. This section shall help to indicate whether the drought in 2015 has caused a strategy change in terms of additional livelihood resources. The fifth section, *Land Productivity*, puts details about the agricultural activities on the record. Here, we focused on the comparison of current yields with the yields in former non-drought years. Respondents were asked about their yields in the past year and in a non-drought year within the past five years and about the reasons why their yields had changed. In the sixth section about *Climate Change* the respondent gives his or her personal opinion about different environmental changes caused by climate change and whether their occurrence has increased or decreased over the past 10 years. In the seventh section on *Drought*, we asked the respondents about the effect and the impact of the drought in 2015 and how they tried to cope with it. A differentiation between effects and impacts shall help to be more precise on direct drought effects, like a decrease of crop production or a deterioration of livestock conditions, and indirect consequences, like food shortages and a decrease of wealth. The eighth section, *Crop Sales and Purchases*, should help to comprehend the dependence on the market and the sufficiency of their own harvest by capturing information about the different crops cultivated and what they are used for. In section 9 and 10 we gathered information about migration processes in the household. In section nine, *Overview of Relatives (from the household) who moved away permanently*, all household members who moved away permanently were included in the data collection. We asked whether the migrants send back remittances, and in case they do, how remittances are being used. In the tenth section, *Overview of Household members who migrate temporarily*, we collected all information about temporary migrants. This section only included people who currently live in the household after a temporary stay somewhere else or currently live somewhere else but have the clear intention to come back. In the eleventh section, *Own Perceptions*, the respondents were asked about their personal assessment of migration and whether they themselves could imagine moving somewhere else. In the twelfth section, *Economic Capital*, we counted famers' assets and whether the number of assets had increased or decreased over the past five years. Furthermore, we asked about their level of income, monthly deviations on income and savings. In the last section, *Satisfaction with Government Activity*, respondents were asked about their satisfaction with the government's policy after the

drought in 2015. For the analysis only answers from the sections 2 (*Basic Individual Characteristics*), 3 (*Land Use*), 4 (*Livelihood Strategies*), 7 *(Drought*), 9 (*Permanent Migration*), 10 (*Temporary Migration*) and 11 (*Own Perceptions*) were used.

In total, the questionnaire contains 120 questions of which 97 questions are closed and 23 questions are open or contain open elements. The answers for open questions were coded subsequent to the data collection. The coding scheme is described in the following chapter. In total, we coded 13 questions. I developed the coding schemes and Dr. Kathleen Hermans revised them with regards to plausibility and traceability. A detailed description of the coding scheme, as well as an overview of the codes, can be found in the appendix (see appendix II). While most codes are key words, codes for the section 11 (*Own Perceptions*) are statements that reflect the respondents' answers.

4.3.2 Focus Group Discussions

In livelihood research, focus group discussions (FGD) belong to a range of methods used for data collection at the grassroots level to examine people's livelihoods (van Aalst, Cannon, and Burton 2008, 167). Chambers et al. promoted several methods of Participatory Rural Appraisal (PRA) in the 1980s to break with top down approaches to rural development (Chambers 1994).[14]

FGD are "a way of collecting qualitative data, which—essentially—involves engaging a small number of people in an informal group discussion (or discussions), 'focused' around a particular topic or set of issues" (Wilkinson 2006, 177). FGD are normally based on a set of questions and a moderator who poses the questions and keeps the discussion going (ibid.). The main purpose of focus group discussions is to determine a range of different perspectives on the research topic and to gain a better understanding of the issue from the participants themselves (Hennink 2014, 2). The unique feature of FGD is its interactive nature, which generates a type of data not accessible through individual interviews (ibid.). During FGD participants can "refine their own views in light of what they have heard" (Hennink 2014, 3). Hennink (2014) argues that FGD are "particularly effective for exploratory research" and "a valuable component of mixed methods approaches" (Hennink 2014,

[14] According to Chambers (1994) PRA "describes a growing family of approaches and methods to enable local people to share, enhance and analyze their knowledge of life and conditions, to plan and to act" (Chambers 1994, 953).

15). According to Finch and Lewis (2003), focus groups normally consist of six to eight people who meet for a an hour and a half up to two hours (Finch and Lewis 2003, 172).

We prepared a guideline to structure the FGD beforehand (see appendix III). The guideline contained an introduction for the farmers to explain what a FGD is about and what our research is focusing on. Also, the guideline contained questions about the meaning of migration, how migration is perceived, migration trends in the *kebele,* reasons for migration, and different types of migration. During the FGD one interviewer was responsible for the moderation of the FGD and the other interviewer took the minutes (see appendix III). The procedure was semi structured: The moderator followed the guideline, but left room for additional questions or remarks.

The material from the FGD is used as additional information to the survey. It shall help to better understand reasons for migration and trends in the two *kebeles.* Therefore I broadly categorized the answers and compared how frequently they were brought up in the two *kebeles* (see appendix III).

4.4 Procedure

For the entire field research we had two enumerators who conducted the interviews and the FGD. Both enumerators had a background in agricultural studies and were from the region and therefore suitable for the research purpose. Both enumerators conducted the interviews simultaneously and could get to me in case they were not sure how to fill out the form. In order to revise the validity and practicability of the questions, we did a pre-test of 25 interviews. After the pre-test we adjusted several questions mainly with regards to the answer options. For both participation in the interviews and FGD, the farmers received a payment of 60 *birr* (Abasokotu) and 50 *birr* (Guguftu).[15]

For the survey we had two meetings beforehand to introduce the enumerators to the questionnaire and train them for the interviews. We also provided them with general instructions concerning content and procedure of the interview and specific instructions for question-specific information. The interviews normally lasted about one hour.

To conduct the FGD, we used the last four days of the field research with two days in each *kebele.* As we already had an impression from the survey what different migration processes looked like, we could precisely define a target group for the FGD. The participants were

[15] 50 birr equals approximately 2 Euros (19 June 2016). This corresponds to the daily allowance of labor opportunities in the region.

selected according to several criteria focusing on different migration experiences (see appendix IV).

4.5 Statistical Research Questions

In order to answer the questions, I mainly use descriptive statistics on percentage frequencies. For all questions I compared the *kebeles* using either the chi-squared test or the Mann-Whitney *U* test. For variables that are not normally distributed, the Mann Whitney *U* Test is suitable as non-parametric statistical test to compare the mean value of two independent samples (compared to the t-test that is only used for variables that are normally distributed). An alpha level of below 0.05 ($\alpha = 0.05$) was used for all tests. I will briefly comment on the variables that I used in order to answer the research questions.

Livelihood Resources

1) What are the main livelihood resources that farmers are using?

I created a new variable with the number of livelihood strategies per household counting the livelihood strategies applied in 2015. As the third and fourth strategy turned out to be less relevant (less than 40 percent used a third and less than 10 percent a fourth strategy), I only used the information from the first and second strategy. I counted the percentage frequencies from both *kebeles* from *q39 (what were the main livelihood resources in the past 12 months).*

2) How did the livelihood resources change over the past 5 years?

I used the same procedure as for the first question using *q40 (What were the main livelihood resources in a normal year within the past five years?).* Additionally, I counted the percentage frequencies of strategy changes from *q41 (Have livelihood strategies changed over the past five years?)* and *q42 (If livelihood strategies have changed, why?).*

Drought 2015

3) How did the drought from 2015 affect farmers' livelihoods?

I created new variables for *q60 (How has your household been affected by the 2015 drought?)* and *q61 (what was the droughts impact on your household?)* to count the number of effects and impacts on the household. Also, I counted the percentage frequencies from both questions for both *kebeles.*

4) What household strategies were applied to cope with the drought from 2015?

I created a new variable counting the number of applied strategies from *q62a-i (different coping strategies).* Additionally, I counted percentage frequencies from each applied strategy for both *kebeles.* Question *q62f (migration as coping strategy)* was also included to answer question 5 (What role did out-migration play in the context of the 2015 drought).

Migration

6) Is out-migration a relevant livelihood strategy in the kebeles?

I counted percentage frequencies of household members who moved away either permanently in *section 9 (permanent migration)* or temporarily in *section 10 (temporary migration).*

7) What are the spatial (rural/urban/internal/international) and temporal (short-term/long-term/permanent) characteristics of out-migration?

For permanent migration, I used percentage frequencies of migrants' destinations from *q74 (destination of permanent migrant)* and *q76 (time of leave)* to indicate the year of leave. For temporary migration, I used percentage frequencies of migrants' destinations from *q88 (destination of temporary migrant)* and *q89a (time of leave),* as well as *q89b (duration of stay).* For the duration of the migrants' stay, I compared the median (of months stayed somewhere else) between the two *kebeles.* As the data do not follow a normal distribution with multiple outliers I opted for the median as an addition to the mean.

8) What reasons do farmers attribute to out-migration?

I used percentage frequencies from *q77 (reasons for leave of permanent migrants)* and *q92 (reasons for leave of temporary migrants).* For temporary migrants, I also indicated percentage frequencies of question *q93* (*reasons for return).* Additionally, I used information from question 4 (possible reasons for migration) and question 6 (outlook on future migration) from the FGD. I categorized the answers and counted how often certain categories were brought up.

9) How do farmers perceive out-migration?

I used percentage frequencies from *q98 (under what circumstances would you move away?)* and *q99 (What makes you stay?)* for both *kebeles.* Additionally, I used information

from question 2 (assessment of migration) from the FGD. I categorized the answers and counted how often certain categories were brought up.

5 Profile of the Study Area

The research area is South Wollo Zone, which is one of ten zones in the Amhara region in Northern Ethiopia. This region belonged to one of the most affected ones during the big famines in 1971-1974 and 1983-1984 (Little et al. 2006, 203). The research area includes the two *kebeles*[16] Abasokotu and Guguftu from the *wereda* (district) Dessie Zuria. Specific information about the situation in the *kebeles* was gathered from interviews with the development agents[17] (DA) in the *kebeles* (see appendix V).

Both *kebeles* belong to the same administrative *wereda*, Dessie Zuria, and are therefore subject to the same political representation. However, they differ in altitude, geographic position and economic well-being. While Abasokotu is located between 2000 and 2500 metres a.s.l., Guguftu is located at 3000 metres a.s.l. and higher, going up to 3900 metres a.s.l. (Ege 2004). Also, their distance to Dessie and Kombolcha, the only cities in the surrounding, differs. Abasokotu is about 18 kilometres far from Dessie, while Guguftu is about 50 kilometres far from Dessie. Although a new road was constructed about in 2013 in order to connect Dessie with Abasokotu and Guguftu, the ride from Dessie to Guguftu takes more than 90 minutes and is difficult to access via public transport.

5.1 Migration

As already described in chapter 2.2.2 there is little data on migration processes in Ethiopia. However, existing data coupled with information from the interviews with the DAs provide some insights into out-migration in the region.

The *Inter-censal Population Survey Report* from 2013 shows an annual growth rate of 1,7 percent at the zonal level (South Wollo) for the period from 2008 to 2013 (Central Statistical Agency 2013, 8). The population in South Wollo added up to 2.728K in 2013. For out-migration there is only data available at the regional level. The report demonstrates that Amhara is the only out of three regions with a net out-migration for the time period 2008 until 2013 (11 per 1000) (ibid, 55).

[16] An administrative unit comprising several small villages.
[17] Each *kebele* has at least one development agent who is responsible for agricultural extension and advisory services. Between 2008 and 2014 the number of development agents has more than quadrupled from 15.000 to more than 60.000 development agents to "improve the agricultural extension system" (Gebresilasie 2014, 2).

At *kebele* level there is only official population data from 2007. Additional information about the current population size was gathered from the interviews. However, there is no official data for migration at the *kebele* level. In Guguftu there has been a slight increase of population. The population has increased from 4302 inhabitants in 2007 (Central Statistical Agency 2010, 334) to 5045 inhabitants in 2015 (information provided by the DA). According to the DA, there has also been in-migration as Guguftu is the only town *kebele* in the area that offers some basic services. At the same time out-migration has increased among young people. In Abasokotu there was a decrease of population from 8422 in 2007 (Central Statistical Agency 2010, 334) to 6423 in 2015 (information provided by DA). According to the DA the decrease of population has several reasons. While family planning has improved and therefore the number of births has decreased, a shortage of arable land has increased migration to nearby cities and abroad.

5.2 Environmental Conditions and Crop Production

Compared to other highland areas in Ethiopia the area is more vulnerable to food insecurity because farmers are more dependent on the short (*belg*) rains than in other areas (Little et al. 2006, 203). Due to the different altitudes and their related dependency on different cropping seasons, the production and productivity varies between Guguftu and Abasokotu.

In Guguftu farmers can only use the short *belg* rains for crop production. As the climatic and environmental conditions above 3000 metres a.s.l. are rough, the potential of farmers to cultivate different crops is highly constrained. In terms of soil quality, this has led to a downward spiral: the soil fertility has decreased over the past ten years despite the use of fertilizer. In order to maintain the soil's fertility, crop rotation would be necessary. But, as there are only few crops that farmers can cultivate, crop rotation is hardly possible. As most people in Guguftu live from farming activities (crop and livestock production), the depletion of nutrients is the major environmental problem for farmers.

In Abasokotu farmers mainly use the longer *kiremt* rains and only in few cases the short *belg* rains for crop production. Overall, agricultural production and productivity has increased over the past ten years due to the use of improved agricultural inputs like fertilizer and seeds. Besides, the implementation of different land improvement practices and the access to irrigation systems facilitate crop production and crop diversification. Generally, farmers in Abasokotu use their land as the main source of income, but also have other income sources like pottery, selling wood or daily labour.

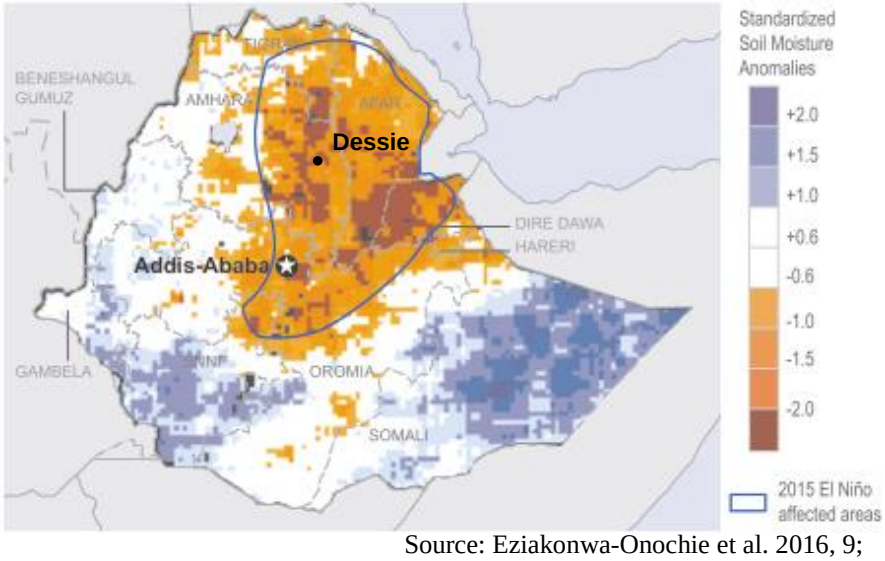
5.3 The Impact of the 2015 Drought

According to The *Joint Government and Humanitarian Partners' Document* South Wollo was among the most affected areas during the 2015 drought (see Fig. 2). The drought has affected both cropping seasons: "On the heels of a failed *belg* season, the *kiremt* rains were late, erratic and ceased early, impacting the *meher* harvest" (Eziakonwa-Onochie et al. 2016, 42). The report claims excessive livestock sales, migration, a reduced quantity of meals, and the purchase of cheap and less nutritious crops to be the worst consequences (ibid.).

In Guguftu, where the *belg* rain normally takes place on approximately 15 days between January and April, there was no rain at all in 2015. The drought had a severe impact on food and fodder crop production and constrained the access to water. As a consequence, 3083 people have become part of the government's relief programme and the rest is part of the Productive Safety Net Programmeme (PSNP).[18]

In Abasokotu, the *belg* rains only took place for two days at the end of April. The *meher* season that normally lasts from June until the end of September started only in the beginning of August. Although the drought has reduced the yields from food and fodder crop production, the impact was not as severe as in many other villages.

Figure 3: El Niño Affected Areas in 2015



Source: Eziakonwa-Onochie et al. 2016, 9; author's identification of Dessie, South Wollo

[18] Generally, in Ethiopia there is a difference between food-for-relief and food-for-work programmemes. The former refers to the unconditional distribution of food aid in times of disasters and was institutionalized with the Relief and Rehabilitation Commission (RRC) in 1974 (Holt 1983, 190). Due to the high number of food aid dependent households, the government initiated the PSNP in 2004 to reduce households' vulnerability to shocks (Devereux et al. 2006, 1). Households within the PSNP receive food or cash transfers for community work.

6 Results

6.1 Household Description

6.1.1 Demographic Values

In total, 315 households were interviewed (*N=315*), comprising 159 households in Guguftu (n_G=159) and 156 households in Abasokotu (n_A=156). The households provided information for each household member compassing 1600 individuals in total with 766 individuals in Abasokotu and 834 individuals in Guguftu.

The sample description (see table 1) shows that the average age in Guguftu (M = 23.9) did not differ significantly from the average age in Abasokotu (M = 24.1) (U = 311263.5, z = -.843, p = .399). The number of household members in Guguftu (M = 5.7) is significantly higher than in Abasokotu (M = 5.39) (U = 301013.5, z = -2.046, p = .041). The distribution between the sexes shows similar values for both *kebeles* ($\chi^2(2, N = 1600) = 4.426$, p = .109). Although more than 95 percent of the respondents were Muslim in both *kebeles*, there is a significant difference between Guguftu (99.9 percent) and Abasokotu (95.8 percent) ($\chi^2(1, N = 1600) = 32.545$, p = .000). The literacy status of household members is similar in both *kebeles* ($\chi^2(2, N = 1600) = 3.207$, p = .201). With regards to the educational level of the household members around 75 percent have either no formal schooling or their primary school incomplete in both *kebeles*. The median of the ordinal variable *education* was the same in both *kebeles* (Mdn = 2), indicating that half of the surveyed population had not completed primary school or no formal schooling at all. However, the frequency distribution of the variable is significantly influenced by the *kebele* ($\chi^2(9, N = 1600) = 21.499$, p = .011). A closer look at the frequency distribution of the percentages suggests that the educational level is slightly lower in Guguftu where 14 percent of the surveyed population had a secondary level degree or higher compared to 20 percent in Abasokotu. The frequency distribution of the variable *occupation* is significantly influenced by the *kebele* ($\chi^2(4, N = 1600) = 15.203$, p = .004). However, the percentages of different occupations reveal similar values for both *kebeles* where more than 80 percent of household members were either farmers or students (from primary up to high school level).

Table 1: Demographic Values

Variable	*Abasokotu* Total (n_A = 766)	*Guguftu* Total (n_G = 834)
	Mean (SD)	***Mean (SD)***
Age	24.14 (18.15)	23.91 (18.9)
*Number of household members**	5.39 (1.44)	5.7 (1.57)
	Percent	***Percent***
Sex		
Male	50.8	46
Female	49.2	54
Religion		
Muslim	95.8	99.9
Orthodox	4.2	0.1
Literacy		
Neither read nor write	38	42.1
Read only	0.5	0.7
Read and write	61.5	57.2
Level of Education		
No formal schooling	41.9	44.1
Primary level	38,3	41,7
Secondary level or higher	19.9	14.1
Occupation		
Farmer	40.5	43.9
Student	41.9	43.7
Unemployed	4.6	1.6
Children not yet active	12.3	10.1
Other	0.8	0.7

Level of Education: Less than 10 percent of the surveyed population indicated an educational of primary complete or higher than secondary incomplete. Therefore percentages from *primary incomplete* and *primary complete* as well as *secondary incomplete* and the rest were summarized. *p<0.05

6.1.2 Agricultural Context

The average size of the land owned by the households is significantly bigger in Guguftu (*M* = 3.89 *timad*) than in Abasokotu (*M* = 2.41 *timad*) (*U* = 6280.5, *z* = -7.801, p = .000). The cropping season used for cultivation also differs between the *kebeles*. While more than 95 percent of the households in Abasokotu use either the long cropping season (*meher*), or both the long and short cropping seasons, almost 99 percent of the households in Guguftu only use the short cropping season (*belg*) ($\chi^2(2, N = 315) = 286.876$, $p = .000$). In Abasokotu the average number of agricultural products of the households (*M* = 3.14) is significantly bigger than in Guguftu (*M* = 2.7) (*U* = 9229.5, *z* = -4.062, *p* = .000). The overall cropping practices are fundamentally different in Guguftu and Abasokotu (see table 2). In Abasokotu, more than 80 percent of the households produce wheat or teff, more than 20 percent produce barley or livestock, and more than 10 percent produce potatoes, maize, or

beans. In Guguftu more than 90 percent of the households produce barley or oats, and more than 20 percent produce eucalyptus or livestock.

Table 2: Agricultural Context

Variable	***Abasokotu* Total (n_A = 156)**	***Guguftu* Total (n_G = 159)**
	Mean (SD)	***Mean (SD)***
*Land size**	2.41 (1.33)	3.89 (1.73)
*Number of agricultural products**	3.14 (1.06)	2.7 (1.05)
	Percent	***Percent***
Cropping season		
Short rainy season (*belg*)	2.6	98.7
Long rainy season (*meher*)	77	0
Both	20.4	1.3
Agricultural Products		
Barley	20	98.7
Wheat	98.1	1.3
Potato	18.1	11.9
Teff	87.1	0
Maize	11.6	0
Beans	14.2	0.6
Eucalyptus	5.8	25.2
Livestock	34.8	29.6
Oats	0.6	96.2

Land size in *timad,* an Ethiopian unit of land. One *timad* equals one-eight of a hectare. *Number of agricultural products* indicates how many agricultural commodities are normally produced on average. Only crops cultivated by more than 10 percent of the surveyed population are reported. *Agricultural:* multiple answers possible (up to five). *p>0.05

6.2 Livelihood

6.2.1 Main Livelihood Resources

The livelihood resources differ widely between the two *kebeles.* In 2015, households in Abasokotu used significantly more resources (M = 2.47) than in Guguftu (M = 2.21) (U = 10361.5, z = -2.752, p = .006) (see table 3). Also, in a non-drought year within the past five years, households in Abasokotu used significantly more resources (M = 2.39) than in Guguftu (M = 2.06) (U = 9289, z = -4.511, p = .000).

Table 3: Number of Livelihood Strategies

Variable	*Abasokotu* Total (n_A = 156)	*Guguftu* Total (n_G = 159)
	Mean (SD)	***Mean (SD)***
*Number of strategies 2015**	2.47 (.815)	2.21 (.697)
*Number of strategies last 5 years**	2.39 (.792)	2.06 (.506)

*p>0.05

A closer look at the livelihood resources reveals a great difference between Abasokotu and Guguftu (see figure 4 and 5). In the survey, the respondents could indicate the household's main livelihood resources, naming up to four resources ranked by their importance for the household. While in Abasokotu more than 90 percent of the households used subsistence crop production as main resource to secure livelihood in 2015, in Guguftu about 16 percent applied subsistence crop production as their main resource. More than 75 percent of the households in Guguftu used livestock production for both sale and own consumption or crop production for sale as their main resource. Moreover, a comparison of the main resources in 2015 and in a non-drought year within the past five years reveals that there was a major change in livelihood resources in Guguftu, while in Abasokotu the main resources remained nearly the same. In Abasokotu subsistence crop production was also the main strategy in a non-drought year within the past five years. In Guguftu there was a clear shift from subsistence crop production in a non-drought year in the last five years (95 percent) to livestock production for both sale and own consumption.

Figure 4: Livelihood Resources Abasokotu

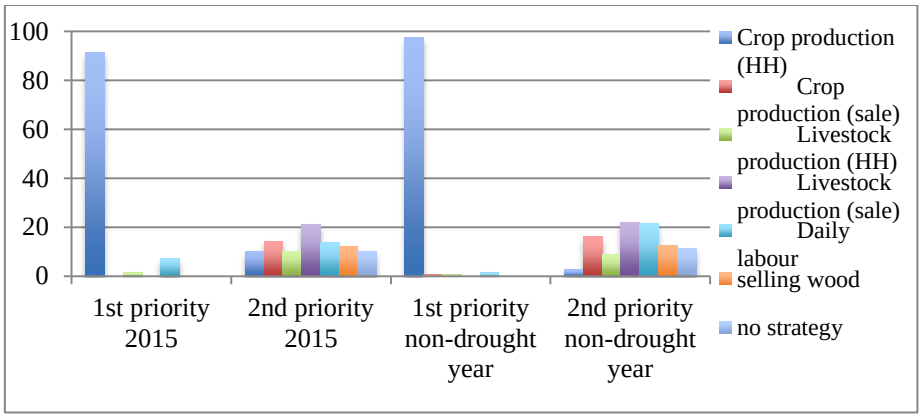
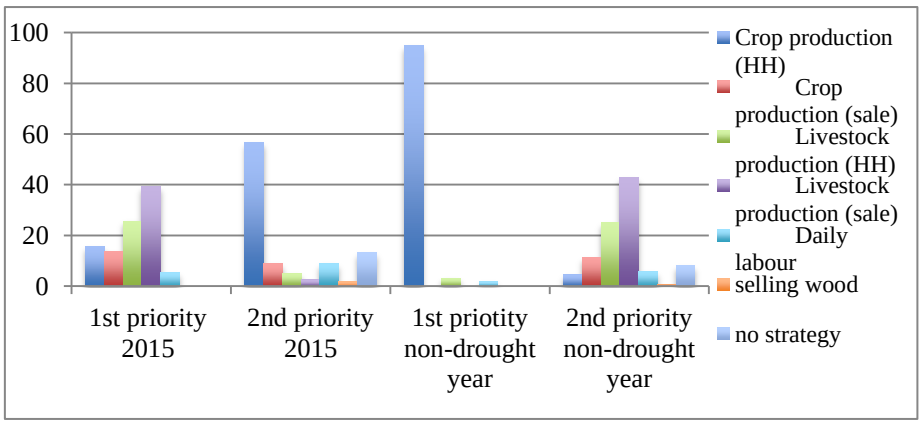


Figure 5: Livelihood Resources Guguftu



6.2.2 Strategy Changes

The households indicated which livelihood resources they used during the past 12 months and which resources they applied during a non-drought year within the past five years. If a household used different resources during the past 12 months and in a non-drought year in the past five years, it was considered a strategy change. If only the priorities changed (e.g. farmers had crop production as their first priority in a non-drought year and only as second priority in 2015), it was not considered a strategy change. In the case of a strategy change, the respondents had to elaborate on the reason for this change. While in Abasokotu 27 percent of the surveyed households had changed their strategy, in Guguftu almost 60 percent had changed their strategy ($\chi^2(1, N = 315) = 31.562$, $p = .000$) (see table 4). The reason for a strategy change differs significantly between Abasokotu and Guguftu; in the latter almost 90 percent of the respondents indicate that the strategy change results from the drought ($\chi^2(1, N = 315) = 15.213$, $p = .000$).

Table 4: Livelihood Strategy Change

Variable	*Abasokotu* Total ($n_A = 155$)	*Guguftu* Total ($n_G = 159$)
	Percent	***Percent***
Livelihood strategy change		
Yes	27,1	58,5
No	72,9	41,5
Reason for strategy change		
Drought	60	89,3
Other	40	10,7

Reason for strategy change only contains the cases in which a strategy change had been indicated. *Other* included reasons like deteriorating health conditions or an employment opportunity.

6.3 Drought

6.3.1 Impact of the 2015 Drought

6.3.1.1 Drought Effects

The question about drought effects (how was your household affected by the drought) captured direct influences of the drought on the household. Such effects include decreasing crop production and deteriorating livestock conditions. The average number of drought effects is significantly higher in Guguftu ($M = 2.13$) than in Abasokotu ($M = 1.54$) ($U = 8076.5$, $z = -5.684$, $p = .000$). Comparing different types of drought effects, in both *kebeles* more than 90 percent of the households suffer from decreasing food crop production (see table 5). In Abasokotu about 35 percent of the households also face a decrease of fodder crop production compared to 56 percent in Guguftu. However, as indicated in section 6.1.2

in Guguftu are more households that produce fodder crops like oats. Additionally, more than 45 percent of the households in Guguftu are affected by a deterioration of livestock conditions. This includes the deterioration of the state of health, as well as the death of livestock.

Table 5: Drought Effects

Variable	*Abasokotu* Total (n_A = 156)	*Guguftu* Total (n_G = 159)
	MV (SD)	***MV (SD)***
*Number of drought effects**	1.54 (.88)	2.13 (.92)
	Percent	***Percent***
Drought effects		
Decreasing food crop production	94.9	99.4
Decreasing fodder crop production	35.3	56.0
Deteriorating livestock conditions	16	47.8
Water shortages	6.4	5.0
Other	1.9	4.4
Not affected	3.8	0.6

Multiple answers possible; *p>0.05

6.3.1.2 Drought Impacts

The question about indirect consequences of the drought (What was the drought's impact on your household?) captured impacts of the drought on the household. The impacts included consequences of drought effects on the household, such as food shortages or health issues.

The average number of drought impacts is significantly higher in Guguftu (M = 1.97) than in Abasokotu (M = 1.21) (U = 6760.5, z = -7.604, p = .000) (see table 6). Almost 90 percent of the households in Guguftu face food shortages, compared to 73 percent in Abasokotu. Other major impacts mentioned by the respondents in Guguftu are decrease of wealth (46 percent), reduced spending capacity (18 percent), impairment of education (13 percent), and increasing market prices (11 percent). In Abasokotu, the only impacts mentioned, besides food shortages by more than 10 percent of the respondents, are decrease of wealth (26 percent) and reduced spending capacity (10 percent).

Table 6: Drought Impacts

Variable	*Abasokotu* Total (n_A = 156)	*Guguftu* Total (n_G = 157)
	MV (SD)	***MV (SD)***
*Number of drought impacts**	1.21 (.612)	1.97 (.931)
	Percent	***Percent***
Drought impacts		
Food shortages	73.1	88.5
Decrease of wealth	26.3	45.9
Health issues	3.2	7.6
Impairment of education	5.1	13.4
Reduced spending capacity	10.3	17.8
Increasing market prices	1.3	10.8
No impact	7.7	0.6
Other	1.9	15.3

Multiple answers possible; *p>0.05

6.3.2 Strategies in Response to the Drought

Farmers have developed several strategies to respond to the 2015 drought, such as non-farm work, assets sales, or food support by the government (see table 7). The number of strategies in response to the drought is significantly higher in Guguftu (M = 2.38) than in Abasokotu (M = 1.89) (U = 8388.5, z = -5.417, p = .000). In both *kebeles* non-farm work is an important strategy with almost 40 percent of the households in Abasokotu and almost 30 percent of the households in Guguftu using different types of non-farm work. The main area of non-farm work is daily labour followed by trade in both *kebeles*. Daily labour employments include many jobs in construction or carrying heavy items. Trade activities mainly include petty trade, like selling animals. The variable *non-farm work* is significantly influenced by the *kebele* ($\chi^2(4, N = 315) = 10.873$, p = .028). The percentage distribution of frequencies of different non-farm activities suggests that non-farm work is more relevant in Abasokotu. There is also a significant difference in the amount and the type of food aid between the *kebeles* ($\chi^2(3, N = 315) = 192.645$, p = .000). While in Guguftu 99 percent of the households receive food aid, most of which are beneficiaries of both (the relief programmeme and PSNP), in Abasokotu around 65 percent of the households get food aid – most in the form of the PSNP. In Guguftu, other important strategies are livestock sales (77 percent) and migration (20 percent). In Abasokotu livestock sales (46 percent) and other assets sales (30 percent) are the prevailing strategies while migration plays a minor role.

Table 7: Drought Strategies

Variable	*Abasokotu* Total (n_A = 156)	*Guguftu* Total (n_G = 157)
	MV (SD)	***MV (SD)***
*Number of strategies**	1.89 (.842)	2.38 (.727)
	Percent	***Percent***
Non-farm work		
Total	39.1	28.9
Daily labour	60.7	71.7
Trade	16.4	23.9
Wage employment	14.8	2.2
Injera baking	8.2	2.2
Food aid		
Total	65.4	99.4
PSNP	81.4	10.1
Relief	12.7	35.8
Both	5.9	53.5
Livestock sales	45.5	77.4
Other assets sales	30.1	4.4
Migration	1.3	19.5
Other	7.1	8.2

For *Food aid* and *Non-farm work* the percentages are indicated as share of all respondents who are beneficiaries from at least one type of food aid or who do some kind of non-farm work. *Livestock sales, Other assets sales, Migration* and *Other* are all dichotomized. Only the percentage of respondents answering with "yes" is indicated. *p>0.05.

6.4 Migration

6.4.1 Migration in the kebeles

Information on out-migration was captured in two different sections in the survey – with respect to temporary migration and permanent migration. The total number of temporary migrants is 117, comprising 56 temporary migrants in Absokotu (n_A = 56) and 61 temporary migrants in Guguftu (n_G = 61). The total number of permanent migrants is 146, comprising 77 permanent migrants in Abasokotu (n_A =77) and 69 permanent migrants in Guguftu (n_G = 69). In both *kebeles*, around 7 percent of all individuals have a temporary migration history. That means, the number of households with a temporary migration history is similar in both Abasokotu (36 percent) and Guguftu (38 percent) ($\chi^2(1, N = 1600) = 0$, p = .998) (see table 8). The number of households with a permanent migration history is also similar in both *kebeles* ($\chi^2(1, N = 372) = 1.308$, p = .253). In Abasokotu, around 43 percent of the households have a household member who migrated permanently compared to 37 percent of the households in Guguftu. In total, around 73 percent of the households in Abasokotu and 70 percent of the households in Guguftu have a temporary, a permanent or both migration histories.

Table 8: Out-Migration in the Kebeles

Variable	*Abasokotu* Total (n_A = 766)	*Guguftu* Total (n_G = 834)
	Percent	***Percent***
Temporary migration	7.3	7.3
	Total (n_A = 185)	Total (n_G = 187)
	Percent	***Percent***
Temporary migration	35.9	38.4
Permanent migration	42.7	36.9
Migration total	73	69.5

Temporary Migration is measured as share of individual household members involved in migration. In the second case *Temporary Migration* and *Permanent Migration* captured the share of households involved in migration.

6.4.2 Characteristics of Migration

6.4.2.1 Spatial Dimension

In Abasokotu the main destinations for temporary migrants are other rural areas within Ethiopia (46 percent) and the capital Addis Ababa (20 percent) (see table 9). For permanent migrants from Abasokotu the main destinations are the capital (40 percent) and cities in other provinces, including destinations in Southern Ethiopia, such as Jimma, as well as Northern Ethiopia, such as Logiya (22 percent). In Guguftu, the main destinations for temporary migrants are cities in the same province (59 percent). For permanent migrants from Guguftu, the main destinations are the capital (57 percent) and cities in the same province (28 percent).

Table 9: Migrants' Destinations

Variable	*Abasokotu* Total (n_A = 56)	*Guguftu* Total (n_G = 61)
	Percent	***Percent***
Destination (temporary migrants)		
Gulf states	10.7	0
City in the same province	3.6	59.4
City in different province	14.3	9.4
Capital	19.6	14.1
Rural area	46.4	17.2
Other	5.4	0
	Total (n_A = 77)	Total (n_G = 69)
	Percent	***Percent***
Destination (permanent migrants)		
Gulf states	19.2	0
City in the same province	10.3	28.4
City in different province	21.8	3
Capital	39.7	56.7
Rural area	9	11.9

Percentages indicate the share of all household members involved in migration.

Overall, there are significant differences between the *kebeles* in both temporary migration ($\chi^2(5, N = 1600) = 47.645$, $p = .000$) and permanent migration ($\chi^2(4, N = 372) = 31.447$, $p = .000$) with regards to the spatial dimension.

6.4.2.2 Temporal Dimension

A look at the point in time that migrants left their *kebele* reveals a significant difference between Abasokotu and Guguftu with regards to temporary migration ($\chi^2(31, N = 1600) = 54.253$, $p = .006$) and no significant difference with regards to permanent migration ($\chi^2(14, N = 372) = 17.416$, $p = .235$). Temporary migration between 1970 and 2014 was below 10 percent in both *kebeles* (as share of all temporary migration). In 2014 and 2015, around 66 percent of all temporary migration took place in Guguftu. In Abasokotu, around 20 percent of temporary migration took place during this period of time. The duration of the temporary stay (in months) somewhere else from migrants from Guguftu differed significantly between the *kebeles* ($U = 1115.5$, $z = -3.243$, $p = .001$). The average stay in months of temporary migrants from Abasokotu was 40 months, compared to 14 months in Guguftu. As the data distribution showed many outliers, the median helps as additional measure to compare the duration of migrants' stay somewhere else. The central tendency of a stay somewhere else was 22,5 (*Mdn*) months Abasokotu compared to four (*Mdn*) months in Guguftu.

Permanent migration history was indicated for the time period from 1992 to 2016. However, around 60 percent of migration in Guguftu took place in 2014 and 2015. In Abasokotu, around 60 percent of the migration took place between 2012 and 2015.

6.4.3 Reasons for Out-Migration

6.4.3.1 Temporary Out-Migration

The reasons for out-migration are variegated and complex. As the temporary out-migration section captured out-migration since 1970, the reasons are also linked to different periods of time. During the 1970s and 1980s, temporary out-migration was highly encouraged by the *derg's* resettlement programmes and during the 1990s military obligations by EPRDF often demanded temporary out-migration. Nowadays, economic and environmental factors seem to be more prevailing as reasons for temporary out-migration. There is a significant difference in reasons for temporary out-migration between the *kebeles* ($\chi^2(7, N = 117) = 24.785$, $p = .001$) (see table 10). In Abasokotu, about 43 percent of all temporary out-migration serves as income-generation for the household (22 percent) or to find a better job

(21 percent). In Guguftu, 27 percent the households concerned by temporary out-migration named the drought explicitly as the reason for out-migration. Twenty-two percent of temporary migrants in Guguftu leave to generate household income.

Table 10: Reasons for Temporary Migration

Variable	*Abasokotu* Total (n_A = 56)	*Guguftu* Total (n_G = 61)
	Percent	***Percent***
Reason		
To generate household income	21.4	22.2
To become independent of the household	1.8	7.9
To find a better job	21.4	15.9
Education	10.7	17.5
Drought	7.1	27
Military obligation	10.7	7.9
Resettlement programme	14.3	0
Other	12.5	1.6

Percentages as share of all household members involved in temporary migration.

The reasons for return do not differ significantly between the *kebeles* ($\chi^2(6, N = 117) = 9.47, p = .149$). In both *kebeles* the main reason for migrants to return was their family (see table 11). In Abasokotu, other important reasons were the migrants' health condition (17 percent) as he or she faced health problems like malaria at the destination, government change (15 percent), such as the end of resettlement programmes with the fall of the *derg*, or that they had completed their task (12 percent) (such as the end of a fixed contract or the end of harvesting season). In Guguftu, other important reasons were that they had completed their task (14 percent) and other (14 percent).

Table 11: Reasons for Return

Variable	*Abasokotu* Total (n_A = 56)	*Guguftu* Total (n_G = 61)
	Percent	***Percent***
Reason		
Health conditions	17.3	6.9
Family	28.8	46.6
Task completed	11.5	13.8
Government change	15.4	5.2
Expectations not fulfilled	7.7	6.9
Environmental conditions at place of origin improved	1.9	6.9
Other	17.3	13.8

Percentages as share of all household members involved in temporary migration.

6.4.3.2 Permanent Out-Migration

With regards to permanent out-migration, the reasons differed significantly between the *kebeles* ($\chi^2(6, N = 145) = 30.666, p = .000$) (see table 12). In Guguftu, more than 70 per-

cent of the *kebele's* permanent out-migration is to become independent of the household (43 percent) or linked to drought (34 percent). In Abasokotu, the main reasons for permanent out-migration are to become independent of the household (33 percent), to find a better job (26 percent), and to generate household income (13 percent). In both *kebeles*, becoming independent of the household plays a major role compared to reasons for temporary out-migration.

Table 12: Reasons for Permanent Migration

Variable	*Abasokotu* Total (*N* = 77)	*Guguftu* Total (*N* = 69)
	Percent	***Percent***
Reason		
To generate household income	13	0
To become independent of the household	32.5	42.6
To find a better job	26	13.2
Education	7.8	5.9
Drought	6.5	33.8
Marriage	6.5	1.5
Other	7.8	2.9

Percentages as share of all household members involved in temporary migration.

6.4.3.3 Stressing Factors for Migration

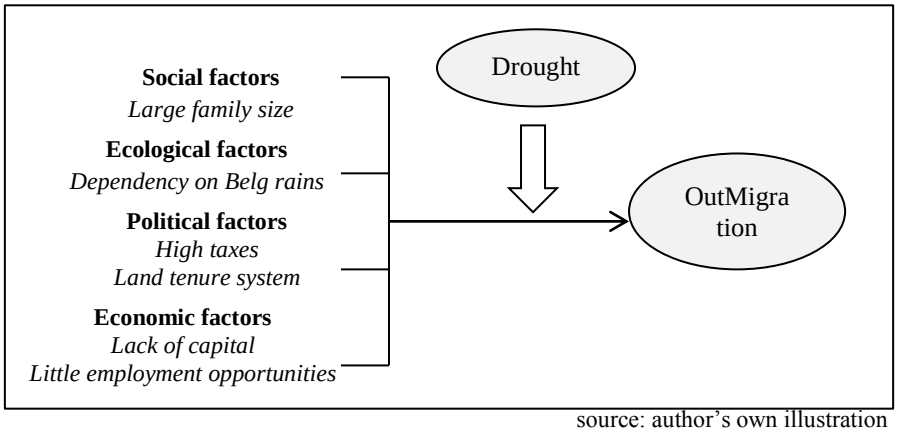
During the focus group discussion, participants had the chance to shed light on reasons for out-migration in more detail. For direct citations from the minutes of the FGD, the respondents' name and the number of the FGD are bracketed. By categorizing the respondents' answers, I detected different stressing factors for out-migration (see appendix III).

In both, the quantitative survey and the FGD, the drought (and consequently drought impacts like decreasing crop production) was said to be a primary cause for out-migration. However, the discussions revealed that there were different stressing factors that can be a reason for out-migration from the *kebeles.* These stressing factors shed light on the complex causes of out-migration. They seem to put stress on farmers' livelihood and may contribute to the decision to migrate. The respondents named stressing factors in four areas – social, ecological, political and economic factors. While the stressing factors may be a reason for out-migration, the drought puts additional pressure on peoples' livelihood and increases the probability of out-migration. Hence, the drought can be understood as a moderator, that increases the likelihood of out-migration (see figure 6).

In Guguftu, few participants highlighted the dependence on *belg* rains as one important factor: "Because our agro-ecology is dependent on *belg* rain and when the rainfall stopped the crop will fail. In order to feed the family anyone wants to move" (Ali Husen, Guguftu

III). In both *kebeles* several respondents claimed that the small size of people's farmland is a factor that encourages out-migration: "the farmland size and productivity may not match the family's needs" (Kindu Teklu, Abasokotu I) and "most young people don't have enough farmland" (Shibrie Said, Guguftu IV). The problem of farmland size has historical roots. A lot of people, who had been resettled during *derg* times, lost their farmland when they came back. The new process of land allocation by the EPRDF was characterized by "inequality" and "corruption" (Yimer Mohammed, Guguftu III).

Figure 6: Stressing Factors for Out-Migration



source: author's own illustration

Nowadays, the problem of insufficient land is closely related to large family sizes: "Large families don't get enough money for everyone, so family members want to become independent" (Shemsya Husen, Abasokotu I). Marriage can be an additional burden for large families with little land: "Small farm size is not enough for the families when family members get married" (Lubaba Yusuf Ali, Abasokotu II). Farmers also pointed to several economic and political constraints that foster migration. A lack of capital hampers the possibility to create own businesses in the *kebeles:* "They have no money to do income-generating activities here" (Zebib Ali, Abasokotu II). Especially in Guguftu, farmers highlight the absence of non-farming employment opportunities "where most young people have no work" (Temir Mohamed, Guguftu IV). The high taxes and costly licenses keep people from trading activities: "We can't do petty trading because the tax is discouragingly high" (Asen Endris, Guguftu II).

Farmers were also asked to estimate future migration trends and whether migration will increase or decrease of the near future. While the question about causes for migration gave insight into possible reasons for people to leave their *kebele* (on a hypothetical level as people discussed reasons for migration in general), the question on future trends revealed

more information about the current situation in the *kebeles.* The answers regarding this question differed between the *kebeles.*

In Guguftu almost all participants expect migration to (continuously) increase. The main reason, as most participants indicated, was the increasing frequency of droughts and a related decrease of crop production: "we are dependent on nature/rainfall and nature is getting worse and worse" (Yimam Husen, Guguftu III). Additional stressors for young people are the high unemployment rate and little chance to get access to loans. In Abasokotu, the majority of the participants considered migration to be decreasing. According to their appraisal "the government creates employment opportunities" (Alimet Asefa, Abasokotu III) so that people don't have to move somewhere else. Several participants explicitly point to the possibility of joining cooperatives[19] to generate (additional) income: "government cooperatives for young people are an adaptation strategy" (Mohamed Husen, Abasokotu III).

In summary, answers from the questions demonstrated two things: while most respondents in both *kebeles* generally agree on reasons for out-migration in the area, the actual tendency to move at the time of data collection seems to differ. Although the quantitative assessment suggested similar numbers of out-migration, the participants of the FGD had differing forecasts on future migration flows in the *kebeles.* Apparently, stressing factors for out-migration are presently more prevailing in Guguftu while there are opportunities in Abasokotu that counteract out-migration.

6.4.4 Assessment of Migration

6.4.4.1 Hypothetical Reasons for Out-Migration

Answers from the respondents regarding under what circumstances they would move away do not differ significantly between the *kebeles* ($\chi_2(8, N = 315) = 13.707$, $p = .090$) (see table 13).

In both *kebeles*, around 28 percent of the respondents consider current environmental conditions, or a deterioration of these, as a motive to leave their *kebele* at some point. Also, in both *kebeles* around 27 percent indicate that they would not move away under any circumstances.

[19] Cooperatives are associations of people to meet common social and economic needs, and have especially been a central government strategy for development in rural Ethiopia. The government provides loans, tax exemptions, and the like to support these rural initiatives.

Table 13: Under what circumstances would you move away?

Variable	*Abasokotu* Total (n_A = 156)	*Guguftu* Total (n_G = 159)
	Percent	***Percent***
Reasons for migration		
If environmental conditions continued like this or even got worse, I would move away.	28.2	28.3
If food security in my household deteriorated, I would move away.	9	14.5
If I were young and healthy, I would move away.	5.8	9.4
If my social life deteriorated, I would move away.	1.9	0
If economic conditions somewhere else were more promising, I would move away.	10.3	8.8
I have already planned to move away soon	3.8	1.9
As soon as my children are old enough to take care of themselves, I would like to move away.	4.5	6.9
I don't want to move under any circumstances.	26.9	27
Other.	9.6	3.1

Also, answers about reasons that make them stay in their *kebele* rather than moving somewhere else did not differ significantly ($\chi^2(7, N = 315) = 13.670$, $p = .057$). In both cases, social reasons seem to be prevailing (table 14). Thirty-three percent of respondents in Abasokotu and 38 percent of respondents in Guguftu pointed to their family as a reason to stay in their *kebele.* Also, health issues played a role in Abasokotu (18 percent) and Guguftu (23 percent).

Table 14: What makes you stay?

Variable	*Abasokotu* Total (n_A = 156)	*Guguftu* Total (n_G = 159)
	Percent	***Percent***
Reasons for staying		
The production from my farmland is relatively good.	7.1	1.3
I don't think the living conditions will be better elsewhere.	16.7	11.3
I am afraid of moving somewhere else.	5.1	7.5
My cultural and social life make me stay here.	9	5
I need to support my family.	32.7	37.7
I am not in the state of health to move somewhere else.	17.9	23.3
Nothing.	3.8	2.5
Other.	7.7	11.3

6.4.4.2 Perception of Migration

> "Migration is a tool that can be used by anyone to jump the problematic seasons." (From the minutes from focus group discussion III in Guguftu)

As indicated in the quantitative results, most of the respondents are not planning to move away. When asking about possible reasons for them to leave, in both *kebeles* around 27 percent said that they would not want to move at all. This result provoked the question of how migration is perceived in general: Is migration rather positively or negatively connoted? Results from the FGD revealed more in-depth information.

When discussing positive and negative effects of migration for the households, the overall tendency differed between the *kebeles.* In Abasokotu migration was rather positively connoted. Most farmers acknowledged the positive effect of "future change" be it "to build a new house" (Ansha Ahmed, Abasokotu I) or simply "to get a better life in the future" (Zeyiba Mohammed, Abasokotu I). In Abasokotu, only few farmers pointed to negative aspects of migration. Arguments brought forward against migration were mainly based on negative experiences of returned migrants: "I suffered when I was in Saudi Arabia. The house owner shouted at me and tried to hit me" (Abeze Abera, Abasokotu IV). Others highlighted that migration "is not the solution to the problem" (Husen Endris, Abasokotu IV).

In Guguftu migration was rather negatively connoted. When people favored migration it was mainly because of the effect "to jump problems like drought" (Asen Endris, Guguftu II), but only "until the situation improves again" (Ali Husen, Guguftu III). Most farmers pointed to the negative effects of migration including the dangers (like diseases or crime), economic uncertainties (like bad working conditions), or the high expenses somewhere else. Some participants also referred to their negative experiences made during the *derg* times. When returning after the *derg* had been disempowered, they lost their farmland. Driven by this experience and afraid of losing their farmland again, migration has a negative connotation for many elder people.

7 Discussion

The results have demonstrated that the *kebeles* – although located in the same district in Ethiopia – differed with regards to several aspects like farming practices, drought impact, as well as peoples' migration behaviour (see table 15). As the results of the survey and the FGD include a lot of information on livelihood, drought, and migration, and I will briefly summarize the most important results although this is a rough simplification of the actual findings. I will then interpret the results in chapter 7.1 more in detail and point to the limitations in chapter 7.2.

Major differences in the *kebeles* with regards to the agricultural environment are the cropping season and cultivated crops. While farmers in Guguftu only use *belg* rains and mainly produce barley and fodder crops (oats), farmers in Abasokotu mainly produce with the longer *kiremt* rains (*meher* season) and have more diverse crops. In both *kebeles*, crop production was the major livelihood resource in a non-drought year. In 2015, the livelihood resources barely changed in Abasokotu, while in Guguftu, most farmers changed from crop production to livestock production as major resource. With regards to the drought, two findings appeared to be important: quantitatively, households in Guguftu faced more drought impacts as households in Abasokotu. Qualitatively, the impacts seemed to be more severe in Guguftu where decreasing wealth, impairment of education, and rising market prices posed challenges beyond food shortages. The number of people who rely on food aid is much higher in Guguftu. Besides, most respondents were part of the relief programme that targets extremely vulnerable people in emergency situations.

Table 15: Key Results

	Kebele	
Domain	**Abasokotu**	**Guguftu**
Farming		
Main cropping season	*Meher*	*Belg*
Diversity of crop production	Diverse crops (teff, wheat, others)	Few crops only (oats, barley)
Livelihood		
Main resources in a non-drought year	Crop production	Crop production
Main resources after drought in 2015	Crop production	Livestock production
Drought		
Drought impacts	Medium	High
Dependency on Food aid	Medium (mainly PSNP)	High (mainly relief)
Migration		
Main destination	Gulf, Addis Ababa, rural areas	Nearby cities, Addis Ababa
Average time	2 years	< 6 months
Reasons	Economic factors	Economic factors, drought

Migration tendencies also differed between the *kebeles*. In Abasokotu, most migrants leave for a longer period of time to farther destinations. Their reasons are mainly economical. In Guguftu, most migrants only leave for a short period of time to closer destinations. Besides economical reasons, the drought is a main reason for people to leave. From a hypothetical view, farmers in Guguftu and Abasokotu agreed on reasons for out-migration. In both *kebeles* the deterioration of environmental conditions and drought were seen as an important driver of out-migration. Besides, they pointed to different stressing factors, such as land scarcity, high taxes and little employment opportunities that can cause out-migration.

7.1 Interpretation of the Results

7.1.1 Livelihood Resources

The sample description has demonstrated that agricultural conditions differ greatly between the *kebeles.* It became apparent that farmers in Guguftu are less flexible with regards to the cultivation of agricultural products. This results from the strong dependency on *belg* rains that serve as cropping season for 99 percent of the farmers in Guguftu. In areas located at altitudes higher than 3000 metres a.s.l., it is not possible to use the longer *kiremt* rains for cropping. The rough conditions at 3000 metres a.s.l. and higher coupled with the dependency on *belg* rains allow only for few crops to be cultivated. The results from the FGD have confirmed that the farmers consider their dependency on *belg* rains as a major constraint. In Abasokotu, where most farmers use the *meher* season, the conditions to cultivate different crops are favourable.

With regards to livelihood resources, there have been significant differences between the two *kebeles.* As shown in the analysis, farmers in Abasokotu have more livelihood resources and seemed to be less vulnerable to the drought. This became apparent through the comparison between livelihood resources used in 2015 and livelihood resources used in a non-drought year in the last five years. In both *kebeles*, most households had crop production (for the own consumption) as main livelihood resource in a non-drought year during past five years. In Abasokotu, this was the same in 2015. In Guguftu, the composition of livelihood resources changed enormously in 2015 and most households had livestock production as main livelihood resource. Ninety percent of the respondents confirmed that this change resulted from the drought. This change suggests a strong influence of the drought on farmers' livelihoods in Guguftu.

Answer about the effects and impacts of the drought affirmed this suggestion. In Guguftu, immediate effects like crop failures and a deterioration of livestock conditions were more severe than in Abasokotu. In Guguftu, the immediate effects of the drought seem to be related to the dependency on *belg* rains. These lead to severe harvest losses concerning both food and fodder crops. This confirms the results from quantitative studies in Ethiopia that droughts coincide with a decline in harvest (Demeke, Guta, and Ferede 2004). Interestingly, around 90 percent of the respondents in Abasokotu indicated harvest losses as a consequence of the drought. However, considering the fact that most farmers still had crop production as major livelihood source, the harvest losses might have been less grave. It is also possible that the overall production in Abasokotu is higher. In order to properly evaluate the droughts effect on crop production, more detailed information on crop yields is needed. Besides, the impacts of the drought, like food shortages and decreasing wealth, seem to be more severe in Guguftu. Food shortages can be interpreted as a direct consequence of harvest losses. In this case it is also difficult to evaluate how severe food shortages are for the households. One indicator may be the acquisition of different food aid types (see next paragraph). Drought impacts, like decreasing wealth, are more difficult to interpret, as we do not know what exactly the cause is. Decreasing wealth may result from declining crop production of both food and fodder crops, as well as decreasing livestock production. It is most likely a mix of multiple factors as people have fewer earnings from the sale of food crops, fodder crops, and livestock. In SLA terms, the results suggest that farmers' livelihoods in Guguftu are less sustainable as they were more vulnerable to the 2015 drought than in Abasokotu.

The analysis has demonstrated that farmers in Guguftu have more strategies to respond to the drought. One major difference could be found with regards to food aid. In Guguftu, almost 100 percent of the farmers are part of the relief programme or both, PSNP and the relief programme. This illustrates that farmers in Guguftu have been classified as more vulnerable to the drought, as the relief programme is designed by the government and donor agencies to target the most affected people in Ethiopia. The role of food-for-relief and food-for-work programmes may be crucial, as many farmers point to their role when talking about livelihood. However, one should keep in mind that it is difficult to classify food aid as an active strategy (as it largely depends on the government) and that a more sophisticated distinction between active strategies and more passive alternatives (see limitations) might help for the analysis.

It is also remarkable that non-farm work is more widely used as a strategy in Abasokotu than in Guguftu. One explanation for this is that in Abasokotu, there are simply more employment opportunities, so that this strategy is more feasible. This could also apply for the strategy of selling assets (other than livestock). Overall, farmers in Abasokotu might dispose of more assets than farmers in Guguftu. Regarding livestock sales, the findings confirm the concerns of the *Joint Government and Humanitarian Partners' Document.* In Guguftu, "excessive livestock sales" (Eziakonwa-Onochie et al. 2016, 42) appear to be widely used as a strategy to respond to the drought.

7.1.2 Migration dynamics: Between Short-Term Coping and Long-Term Mitigation

Answers from the migration sections have brought out interesting, and to some extent, contradictory findings. The number of migrants, as well as the respondents' hypothetical reasons for leaving and staying are similar in both *kebeles*. However, the destinations, the temporal aspects and actual reasons for migrants to leave are quite different. The number of migrants – with around 70 percent of the households having a migration history (between 1970 and 2016) in both *kebeles* - suggests that migration "often [is] the rule, rather than the exception" (Mcdowell and Haan 1997, 1).

Hypothetical vs. Actual Reasons for Out-Migration

The reasons for out-migration were regarded from different perspectives (hypothetical reasons vs. actual reasons of migrants who left). With regards to the drought, these perspectives showed the complex linkages of different reasons; while many farmers from Guguftu considered the drought to be a direct reason for out-migration, other reasons, such as generating family income or relieving the household can be closely related. On top of that, the FGD pointed to several stressing factors that may shape the decision to migrate (especially in times of drought). Interestingly, hypothetical reasoning on causes for out-migration and actual reasons of migrants who left the *kebeles* differ. From a hypothetical perspective, farmers from Guguftu and Abasokotu shared the view on migration drivers. They considered the deterioration of environmental conditions to be a main driver. The FGD showed that the drought and the deterioration of environmental conditions more generally could not be the sole explanation for out-migration, but that the decision to migrate depends on several (interrelating) stressing factors. In both *kebeles* the farmers agreed that there are different stressing factors, such as land scarcity, large family sizes, a lack of capital, and high taxes. In the case of Guguftu, also the dependency on *belg* rains was mentioned in this

context. However, the actual reasons of people who left their *kebele* differed between Abasokotu and Guguftu. In the latter, the drought played a crucial role according to the respondents while in Abasokotu economical motives seemed to be prevailing. Why are there as many out-migrants in Abasokotu as in Guguftu? Apparently, although migrants hypothetically consider environmental changes to be a primary cause for out-migration, other factors are important and steady drivers of out-migration too.

Household vs. Individual

Generally, the household seemed to play an important role, as many migrants left their household in order to generate household income or cover basic needs of the household. Many temporary migrants return because they need to support their family. This seems contradictory to Morrissey's (2013) finding that the individual's role in making mobility decisions is more important than the household's role. In this case study, the household played a central role in both out-migration from Guguftu and out-migration from Abasokotu. Then again, it may confirm Ezra's (2001) results that long-term migration is a strategy to relieve the household in times of drought. As illustrated in chapter 2.2.2 (Including the Migration Dimension), opinions about the rationality of migration decisions differ widely among researchers. As it is often the case with ideal types in research, an ordinary distinction between rational decisions and the heteronomous influence of overlying structures in shaping migration decisions is too simplistic. Rational considerations (on how to cover food shortages of the household best possible) influence the decision to migrate, just as structural conditions do (such as employment opportunities or government support like food aid and cooperatives).

Spatial Dimension

Overall, migrants from Abasokotu appear to cover longer distances. In Abasokotu, the majority of migrants go the Gulf States, Addis Ababa, or other rural areas. Out-migration from Guguftu is mainly to nearby cities like Dessie, Kombolcha, or Addis Ababa. Although it is difficult to understand the underlying mechanisms, it seems like the motives for out-migration in general are key. While drought appears to be one important driver for out-migration from Guguftu, as indicated by one third of the respondents, economical motives, like generating income for the household, finding a better job, or become independent of the household (accounting for more than two-thirds of the permanent migrants in Abasokotu), are prevailing in Abasokotu. These motives rather trigger long-term migration to fur-

ther destinations than the immediate need to get food and cover other basic needs. This immediate need that appears to be more prevailing in Guguftu may rather invoke short-term migration to closer destinations. Besides, out-migration to other rural areas has been more popular in Abasokotu than in Guguftu. This can also be interpreted as closely related to the economical motives. For long-term migration that seeks to create new capital, farming work in other more fertile parts of the country can be profitable. For people in need of prompt payments to cover food shortages, these areas might be too far and do not allow for daily work (as salaries are normally paid on a seasonal basis).

Temporal Dimension

On average, out-migrants from Abasokotu stay somewhere else for about two years. In Guguftu, people spend only about 4 months somewhere else. The date of leave also shows that out-migration from Guguftu hit its peak in 2015 and therefore appears to be directly related to the drought. In Abasokotu, out-migration has already been more common in the years before 2015 and seems consequently less related to the environmental triggers. Apparently the destination and the duration of the stay somewhere else are related. This seems to be logical as the financial and temporal effort for long distance migration is bigger. Consequently, it is only worth moving to a distant destination if the stay is longer.

Assessment of Migration

Another important difference can be derived from the respondents' assessment of migration. While migration was overall positively connoted in Abasokotu, respondents in Guguftu rather pointed to the negative aspects of out-migration. In Abasokotu, people highlighted the opportunities of out-migration and the chance to create a perspective for the future. In Guguftu, the respondents rather portended negative aspects of out-migration, like diseases and dangers. This can also be interpreted as closely related to migration motives. While short-term migration that merely serves drought compensation does not offer long-term perspectives, long-term migration to generate household income and create capital appears to be more promising.

Overall, this case study suggests that the drought rather triggers short-term migration to closer destinations to cover immediate needs like food shortages. Migration processes that are less affected by the drought (like in Abasokotu) rather involve long-term migration to further destinations and rather serve the generation of capital than to cover immediate

needs. This finding differs from the study results from Gray and Mueller (2012) who found that drought in the Northern Highlands in Ethiopia increases long-distance migration.

7.2 Limitations

The thesis gives an overview of drought impacts and migration processes at the local level and provides first explanatory approaches. However, various methodological and conceptual difficulties should be considered when interpreting the results. Overall, the results don't provide explanations. Most of the analysis is based on descriptive statistics, and therefore cannot explain certain behaviour. Although results from the qualitative FGD might give a first idea on causal links, the material is not sufficient for an explanatory model.

Reliability and Validity

The interviews were conducted with respondents of whom only few themselves had a migration experience. Most of the respondents provided information about migration processes for other household members. According to Alwin (2007), the reliability and validity of data obtained from proxy respondents can be lower than of data obtained directly from the migrant (Alwin 2007, 149–152). However, when interviewing migrants at their place of destination it is much more difficult to target people from the same place of origin. In order to include geographic, agricultural, and other location-specific factors, interviews at the place of origin appear to be very important, as it would be difficult to trace migrants from the same place of origin at their destination.

It was beyond the scope of the thesis to perform reliability and validity checks. Such checks can be help to improve the data quality and should be considered as an important part of more extensive field research. With regards to the qualitative approach the data quality also needs to be scrutinized. The FGD were not transcribed due to a lack of resources and time. The analysis is only based on notes taken by the interviewer. Therefore, the literal content of the FGD is not accessible and the results may be less exact. Nevertheless, experienced moderators conducted the interviews, and the content and meaning of the answers were always commonly elaborated. Besides, Mayring (2002) argues that notes taken during the interviews can be sufficient when the emphasis is on content and thematic aspects (Mayring 2002, 96). For the analysis, the coding scheme was not approved by a second coder, but rather developed for the purposes of this thesis. According to Spence (2004), the reliability of codes can be increased with a second coder (inter-coder-

reliability) (Spence 2004, 235). During the coding process, several answers were restructured and shifted to different questions. This intervention is already an interpretation of the researcher and needs to be considered when interpreting the results with regards to validity. Some of the results also showed discrepancies: the questions about hypothetical reasons for migration and actual reasons of migrants differed (especially in Abasokotu). This questions the validity of the questions about hypothetical reasons for leaving.

Statistical Limits

Many results from the chi-squared, as well the Mann-Whitney *U* Test, were significant. Statistical hypothesis tests like the chi-squared test are sensitive to large samples (Ellis 2009). This means that even small effects can reach statistical significance although their practical relevance may be questionable. Consequently, it can be helpful to consider effect sizes, as they are independent of the sample size. Graphs and probability plots can also be helpful to evaluate the results. Especially with regards to the demographic variables (religious affiliation, educational level, occupation), the percentages indicated that differences were marginal. For these variables, the effect sizes showed a small effect[20] only (religious affiliation d=0.29; educational level d=0.23; occupation d=0.1).

When analysing effects and impacts of the drought on the households, it was difficult to understand what effects (like decreasing crop production or deteriorating livestock conditions) lead to certain impacts (like decreasing wealth or impairment of education). For more detailed knowledge on the relation between drought effects and the drought impacts, more complex statistical analysis like regression analysis is needed.

Operationalization

With regards to the operationalization, this thesis faces several constraints. First, the artificial divide between events related to climate change and long-term environmental changes does not reflect the complex reality. Especially in areas with high land degradation, which result not only from climate change, but also from land use practices and so on, the impact of droughts may be more grave. The role of environmental changes not (only) caused by climate change, like land degradation and the depletion of soil nutrients, is not taken into account in this thesis, but may provide further important insights. Furthermore, the divide between short-term climate events and long-term changes is difficult. The presented study

[20] According to Cohen (1988).

allows for detecting the direct impact of the drought and helps to understand the consequences that climate events have for peoples' livelihoods. Yet, it provides no insights regarding the increasing frequency of such climate events.

Second, the divide between temporary and permanent migration was important to capture different forms of migration, but at the same time neglects the analogies between both forms. For data collection, this was important, as only migrants who had already returned after a temporary stay somewhere else were counted as household members. However, many permanent migrants had the same motives to leave their household and may return after a temporary stay somewhere else. For the interpretation it seems therefore more reasonable to differentiate between short-term migration, long-term migration and permanent migration. However, a differentiation of short-term and long-term migration also seems to be arbitrary and is subject to the researcher's intervention.

Third, there has been no qualitative and quantitative severity rank of harvest losses. The respondents only indicated that their harvest had declined. In 2015, the majority of households from both villages claimed harvest losses to be a drought effect. However, only households from Abasokotu indicated that they still had crop production as a primary livelihood resource. In Guguftu the number of households using crop production as primary livelihood resource was substantially lower. This suggests that the qualitative and quantitative differences in harvest losses between the *kebeles* could be enormous. However, more detailed data would be needed to prove this case.

Fourth, the concept of 'strategies' in response to the drought turned out to be difficult. While some strategies, like the sale of assets, are very active measures undertaken by the households, other strategies, like food aid, are passive and cannot be chosen by the participants themselves. Furthermore the concept of strategies does not differentiate between strategies that are beneficial and strategies that are disadvantageous. For example, the *Joint Government and Humanitarian Partners' Document* considered "excessive livestock sales" (Eziakonwa-Onochie et al. 2016, 42)as a negative consequence of drought. This illustrates that not all strategies in response to the drought may be beneficial in the long run. A classification between advantageous and disadvantageous strategies may be important. The concept of strategies is analytically imprecise and it provokes the question of how useful the concept of 'strategies' in response to the drought generally is.

Fifth, in the quantitative survey the reasons for out-migration were regarded separately from each other, although they might actually be related. For example, migration in order to generate household income could also be related to the drought and vice versa. The FGD revealed that different stressing factors (like the dependency on *belg* rains or few non-farming employment opportunities) and drought impacts are closely related. This thesis cannot illustrate to what extent farmers are affected by the different stressing factors they mentioned. For more information, a detailed analysis of employment opportunities, tax policies, or land tenure policies would be needed.

8 Conclusion

This case study was designed to investigate patterns of out-migration in Ethiopia's Northern highlands, where the drought in 2015 has caused severe crop failures. A comparison of two *kebeles* highlighted different impacts of the drought on subsistence farmers. These impacts included food shortages, a decrease of wealth, an impairment of education, and rising market prices. In order to deal with these impacts, farmers have developed various strategies including out-migration. However, the study has demonstrated that out-migration is not only a relevant strategy in times of drought, but serves to improve peoples' livelihood in other instances as well. The out-migrants' destination and the duration of their stay differed between the *kebeles.* Out-migration from Guguftu mainly took place to nearby cities for short periods of time and rather served to cover the households' immediate needs. Out-migration from Abasokotu was more long-term and to farther destinations.

The current study's approach was explorative, and several patterns of out-migration from two drought-affected villages have been uncovered. Yet, the results are only descriptive and are not sufficient for an explanatory model. However, the findings provide several implications and point to possibilities for further research on EM.

One of the most important implications was demonstrated via the comparison of two *kebeles* in the same district. Even on such a small geographic scale, the impact of the drought, and consequently migration patterns, vary. This points to the importance of the local context. While climate data covers general trends and developments in a larger geographic area, the case study has shown that impacts and consequences nevertheless differ within small areas. This also suggests the important role of peoples' perception. Although both *kebeles* were affected by the drought and had similar numbers of out-migrants, the respondents indicated different reasons for out-migration. This demonstrates the importance of qualitative approaches for research on environmental changes and migration. The mere existence of out-migration from areas affected by drought is not sufficient to label it as EM.

Further empirical investigation could be done in areas that are not necessarily in the same geographic area, but only use *belg* rains for crop production in order to understand the influence of other variables in areas that are particularly vulnerable to droughts. This also accounts for research that focuses particularly on households that are part of the relief programme. As the relief programme targets extremely vulnerable people, research could also

focus on targeted households only to examine the influence of other variables (such as cropping season, farming activities and rearing of livestock). Furthermore, it would be interesting to focus only on households with a migration history that is linked to drought in order to understand what these households have in common and in which regards they differ from other households.

The results have also shown the influence on non-environmental factors that shape the decision to migrate. Some of these factors, such as employment opportunities or government initiatives, have been perceived as counteracting out-migration processes. Other factors, such as high taxes and little employment opportunities, have been perceived as fostering out-migration processes. This reveals the important role of policy-making. As already indicated before, we need to ask what climate change can be really blamed for and what the result of poor governance is.

Overall, the study has demonstrated the need for further theorization of the dynamics of environmental migration. The SLA helps to get an impression of subsistence farmers' living conditions, their daily needs and different environmental, social, and political factors that influence their everyday life. Yet, it does not provide an analytical framework to understand migration dynamics. It is of course difficult to develop a general framework given the weight of the local context. However, first steps have been taken to theorize the interaction of environmental and non-environmental factors that shape migration dynamics (Black et al. 2011; James William Morrissey 2013). This kind of evidence-based approach is needed to further understand dynamics of environmental migration and provide generalizable typologies.

References

van Aalst, Maarten K., Terry Cannon, and Ian Burton. 2008. "Community Level Adaptation to Climate Change: The Potential Role of Participatory Community Risk Assessment." *Global Environmental Change* 18(1): 165–79.

Adem, Alebachew. 2011. *Climate Change and Rural Livelihoods in Northern Ethiopia. Impacts, Local Adaptation Strategies and Implications for Institutional Interventions*. ed. Meheret Ayenew. Addis Ababa: Forum for Social Studies.

Adger, Neil, Saleemul Huq, Katrina Brown, Declan Conway, and Mike Hulme. 2003. "Adaptation to Climate Change in the Developing World." *Progress in Development Studies* 3(3): 179–95.

Allison, Simon. 2016. "THINK AGAIN: Unstable Climates Make for Unstable Politics." http://southernafrican.news/2016/01/20/think-again-unstable-climates-make-for-unstable-politics/ (January 29, 2016).

Alwin, Duane F. 2007. *Margins of Error A Study of Reliability in Survey Measurement*. Hoboken, N.J.: Wiley-Interscience.

Baker, Aryn. 2016. "How Climate Change Is Behind the Surge of Migrants to Europe." *Time*. http://time.com/4024210/climate-change-migrants/ (January 26, 2016).

Bates, Diane C. 2002. "Environmental Refugees ? Classifying Human Migrations Caused by Environmental Change." *Population and Environment* 23(5): 465–77.

Bawden, Tom. 2016. "Refugee Crisis: Is Climate Change Affecting Mass Migration?" *The Independent*. http://www.independent.co.uk/news/world/refugee-crisis-is-climate-change-affecting-mass-migration-10490434.html (January 29, 2016).

Bewket, Woldeamlak. 2009. "Rainfall Variability and Crop Production in Ethiopia Case Study in the Amhara Region." In *Proceedings of the 16th International Conference of Ethiopian Studies*, eds. Svein Ege, Harald Aspen, Birhanu Teferra, and Shiferaw Bekele. Trondheim, 823–36.

Black, Richard. 2001. *Environmental Refugees : Myth or Reality ?* New Issues in Refugee Research. Brighton. http://www.unhcr.org/research/working/3ae6a0d00/environmental-refugees-myth-reality-richard-black.html.

Black, Richard, W. Neil Adger, Nigel W. Arnell, Stefan Dercon, Andrew Geddes, and

David Thomas. 2011. “The Effect of Environmental Change on Human Migration.” *Global Environmental Change* 21(1): 3–S11.

Blunch, Niels-Hugo, and Caterina Ruggeri Laderchi. 2015. *The Winner Takes It All: Internal Migration, Education and Wages in Ethiopia*. Discussion Paper Series IZA. Bonn. http://ftp.iza.org/dp8926.pdf.

Braun, Joachim Von. 1991. *A Policy Agenda for Famine. Prevention in Africa*. International Food Policy Research Institute. Washington, D.C. http://ebrary.ifpri.org/cdm/ref/collection/p15738coll2/id/126654.

Brüne, Stefan. 1983. “Die Äthiopische Agrarreform : Wirtschaftliche Und Soziale Folgen Radikaler Agrarpolitik.” *Afrika Spectrum : Zeitschrift für gegenwartsbezogene Afrikaforschung* 18(2): 117–37.

Buzan, Barry, Ole Wæver, and Jaap de Wilde. 1998. *Security: A New Framework for Analysis*. Boulder: Lynne Rienner Pub.

Castles, Stephen. 2002. *Environmental Change and Forced Migration : Making Sense of the Debate*. New Issues in Refugee Research. Geneva. http://www.unhcr.org/research/working/3de344fd9/environmental-change-forced-migration-making-sense-debate-stephen-castles.html.

Central Statistical Agency. 2010. *The 2007 Population and Housing Census of Ethiopia. Results for Amhara Region*. Addis Ababa.

———. 2013. *Inter-Censal Population Survey Report*. Addis Ababa.

Chambers, Robert. 1994. “The Origins and Practice of Participatory Rural Appraisal.” *World Development* 22(7): 953–69.

Chambers, Robert, and Gordon R. Conway. 1991. *Sustainable Rural Livelihoods: Practical Concepts for the 21st Century*. IDS Discussion Paper. Brighton. https://opendocs.ids.ac.uk/opendocs/bitstream/handle/123456789/775/Dp296.pdf?sequence=1.

Christian Aid. 2007. *Human Tide: The Real Migration Crisis*. Christian Aid. London. https://www.christianaid.org.uk/Images/human-tide.pdf.

Cohen, Jacob. 1988. *Statistical Power Analysis for the Behavioral Sciences* . 2. ed. Hillsdale, NJ: Erlbaum.

Cooper, P. J M, J. Dimes, K. P C Rao, B. Shapiro, B. Shiferaw, and S. Twomlow. 2008.

"Coping Better with Current Climatic Variability in the Rain-Fed Farming Systems of Sub-Saharan Africa: An Essential First Step in Adapting to Future Climate Change?" *Agriculture, Ecosystems and Environment* 126(1-2): 24–35.

Demeke, M, F Guta, and T Ferede. 2004. "Agricultural Development in Ethiopia: Are There Alternatives to Food Aid?" *Unpublished paper* (January 2004): 1–76.

Devereux, Stephen, Rachel Sabates-Wheeler, Mulugeta Tefera, and Hailemichael Taye. 2006. *Ethiopia's Productive Safety Net Programme (PSNP): Trends in PSNP Transfers Within Targeted Households*. Institute of Development Studies. Sussex. https://www.ids.ac.uk/files/PSNPEthiopia.pdf.

Ege, Sven. 2004. *South Wälo 1:100,000. Topographic and Administrative Map of South Wälo Zone, Amhara Region, Ethiopia*. Trondheim. http://www.eldis.org/vfile/upload/1/document/0708/DOC20522.pdf.

Ellis, P.D. 2009. "Thresholds for Interpreting Effect Sizes." http://www.polyu.edu.hk/mm/effectsizefaqs/thresholds_for_interpreting_effect_sizes2.html (July 20, 2016).

Eziakonwa-Onochie et al., Ahunna. 2016. *Joint Government and Humanitarian Partners' Document*. Addis Ababa. http://reliefweb.int/sites/reliefweb.int/files/resources/ethiopia_hrd_2016.pdf.

Ezra, Markos. 2001. "Demographic Responses to Environmental Stress in the Drought- and Famine-Prone Areas of Northern Ethiopia." *International Journal of Population Geography* 7(4): 259–81.

Ezra, Markos, and Gebre-Egziabher Kiros. 2001. "Rural Out-Migration in the Drought Prone Areas of Ethiopia: A Multilevel Analysis." *International Migration Review* 35(3): 749–71.

Finch, Helen, and Janes Lewis. 2003. "Focus Groups." In *Qualitative Research Practice. A Guide for Social Science Students and Researchers*, eds. Jane Ritchie and Jane Lewis. London: SAGE Publications, 170–99.

Funk, Chris, Jim Rowland, Gary Eilerts, Emebet Kebebe, Nigist Biru, Libby White, and Gideon Galu. 2012. *A Climate Trend Analysis of Ethiopia*. United States Geological Survey. Virginia. https://pubs.usgs.gov/fs/2012/3053/FS12-3053_ethiopia.pdf.

Garbe, Lisa. 2013. "Politische Ökonomie von Land Grabbing Die Äthiopische Agrarpolitik in Einer Kapitalistischen Weltwirtschaft." Bachelor's Thesis. University of Freiburg.

Gebresilasie, Zerihun Nigussie. 2014. "Constraints Faced by Development Agents in North-Western Ethiopia." *Trends in Agricultural Economics* 7: 1–10.

Gemenne, François. 2011a. "How They Became the Human Face of Climate Change. The Emergence of 'climate Refugees' in the Public Debate, and the Policy Responses It Triggered." In *Migration and Climate Change*, eds. Étienne Piguet, Antoine Pécoud, and Paul de Guchteneire. Cambridge: Cambridge University Press, 225–60.

———. 2011b. "Why the Numbers Don't Add up: A Review of Estimates and Predictions of People Displaced by Environmental Changes." *Global Environmental Change* 21(1): 541–49.

Gray, Clark, and Valerie Mueller. 2012. "Drought and Population Mobility in Rural Ethiopia." *World Development* 40(1): 134–45.

De Haan, Leo J. 2012. "The Livelihood Approach: A Critical Exploration." *Erdkunde* 4(66): 345–57.

Hennink, Monique. 2014. "Introducing Focus Group Discussions." In *Focus Group Discussions*, ed. Monique Hennink. New York: Oxford University Press, 1–13.

Hermans, Kathleen. "Human Migration, Climate Change, and Land Degradation: Hotspots of Socio-Ecological Pressure in Ethiopia." (Manuscript submitted for publication).

Holt, J. F J. 1983. "Ethiopia. Food for Work or Food for Relief." *Food Policy* 8(3): 187–201.

Homer-Dixon, Thomas F. 1994. "Environmental Scarcities and Violent Conflict : Evidence from Cases." *International Security* 19(1): 5–40.

Horne, Felix. 2011. "Understanding Land Investment Deals in Africa - Country Report: Ethiopia." Oakland. http://www.oaklandinstitute.org/sites/oaklandinstitute.org/files/OI_Ethiopa_Land_Investment_report.pdf.

Hunter, Lori M., Jessie K. Luna, and Rachel M. Norton. 2015. "Environmental Dimensions of Migration." *Annual Review of Sociology* 41(1): 377–97.

IDMC. 2009. "Ethiopia: fHuman Rights Violations and Conflicts Continue to Cause Displacement." http://www.internal-displacement.org/sub-saharan-africa/ethiopia/2009/ethiopia-human-rights-violations-and-conflicts-continue-to-cause-displacement (May 10, 2016).

IPCC. 2014. Climate Change 2014: Impacts, Adaptation and Vulnerability - Contributions of the Working Group II to the Fifth Assessment Report Summary for Policy Makers. http://www.ipcc.ch/pdf/assessment-report/ar5/wg2/ar5_wgII_spm_en.pdf.

IUCN et al. 2004. *Sustainable Livelihoods and Climate Change Adaptation. A Review of Phase One Activities for the Project On, "Climate Change, Vulnerable Communities and Adaptation."* http://www.iisd.org/pdf/2004/envsec_sustainable_livelihoods.pdf.

Jacobson, J. L. 1988. "Environmental Refugees: A Yardstick of Habitability." *Worldwatch Paper* 86: 257–58.

Jónsson, Gunvor. 2010. *The Environmental Factor in Migration Dynamics – a Review of African Case Studies*. International Migration Institute Working Papers. Oxford. https://www.imi.ox.ac.uk/pdfs/wp/wp-21-10.pdf.

Kefale, Asnake, and Zerihun Mohammed. 2015. *Ethiopian Labour Migration to the Gulf and South Africa*. Ethiopia: Forum for Social Studies (FSS).

Kelemu, Kaleb, Mekonnen Sime, and Mekonnen Hailu. 2014. "Determinants and Levels of Agricultural Development Agents Job Satisfaction : The Case of Kalu Woreda , South Wollo Zone of the Amhara National Regional State." *Ethiopian Journal of Business and Economics* 4(1): 149–75.

Lemenih, Mulugeta. 2004. "Effects of Land Use Changes on Soil Quality and Native Flora Degradation and Restoration in the Highlands of Ethiopia." Doctoral Thesis. Swedish University of Agricultural Sciences Uppsala.

Little, Peter D, M Priscilla Stone, Tewodaj Mogues, a Peter Castro, and Workneh Negatu. 2006. "'Moving in Place': Drought and Poverty Dynamics in South Wollo, Ethiopia." *Journal of Development Studies* 42(2): 26.

Makki, Fouad. 2012. "Power and Property: Commercialization, Enclosures, and the Transformation of Agrarian Relations in Ethiopia." *The Journal of Peasant Studies* 39(1): 81–104.

Mayring, Philipp. 2002. *Einführung in Die Qualitative Sozialforschung : Eine Anleitung Zu Qualitativem Denken*. 5th ed. Weinheim: Beltz.

Mcdowell, Christopher, and Arjan De Haan. 1997. *Migration and Sustainable Livelihoods: A Critical Review of the Literature*. IDS Working Papers. Sussex. http://www.ids.ac.uk/files/dmfile/Wp65.pdf.

Mertz, Ole, Cheikh Mbow, Anette Reenberg, and Awa Diouf. 2009. "Farmers' Perceptions of Climate Change and Agricultural Adaptation Strategies in Rural Sahel." *Environmental Management* 43(5): 804–16.

Meze-Hausken, Elisabeth. 2000. "Migration Caused by Climate Change: How Vulnerable Are People in Dryland Areas ? A Case-Study in Northern Ethiopia." *Mitigation and Adaptation Strategies for Global Change* 5: 379–406.

Milan, Stefania. 2004. "REFUGEE DAY: Searching for a Place Under the Sun | Inter Press Service." http://www.ipsnews.net/2004/06/refugee-day-searching-for-a-place-under-the-sun/ (April 29, 2016).

Morrissey, James W. 2008. "Rural-Urban Migration in Ethiopia." *Forced Migration Review* (31): 28–29.

Morrissey, James William. 2013. "Understanding the Relationship between Environmental Change and Migration: The Development of an Effects Framework Based on the Case of Northern Ethiopia." *Global Environmental Change* 23(6): 1501–10.

Morton, John F. 2007. "The Impact of Climate Change on Smallholder and Subsistence Agriculture." *Proceedings of the National Academy of Sciences of the United States of America* 104(50): 19680–85.

Myers, Norman. 1993. "Environmental Refugees in a Globally Warmed World." *Bioscience* 43(11): 752–61.

———. 1997. "Environmental Refugees." *Population and Environment: A journal of Interdisciplinary Studies* 19(2): 167–82.

Myers, Norman, and Jennifer Kent. 1995. *Environmental Exodus: An Emergent Crisis in the Global Arena*. Washington DC: The Climate Institute.

Nicholson, Calum T M. 2011. *Is the 'Environmental Migration' Nexus an Analytically Meaningful Subject for Research?*. COMCAD Working Papers. Bielefeld. https://www.uni-bielefeld.de/tdrc/ag_comcad/downloads/workingpaper_104_nicholson.pdf.

Nyssen, Jan, Jean Poesen, Jan Moeyersons, Jozef Deckers, Mitiku Haile, and Andreas Lang. 2004. "Human Impact on the Environment in the Ethiopian and Eritrean Highlands - A State of the Art." *Earth-Science Reviews* 64(3-4): 273–320.

Piguet, Etienne, Antoine Pécoud, and Paul de Guchteneire. 2011. "Migration and Climate

Change: An Overview." *Refugee Survey Quarterly* 30(3): 1–23.

Prothero, R. Mansell, and Murray Chapman. 1985. *Circulation in Third World Countries*. London: Routledge & Kegan Paul.

Rahmato, Dessalegn. 1991. *Famine and Survival Strategies. A Case Study from Northeast Ethiopia*. Uppsala: The Scandinavian Institute of African Studies.

Rosell, Staffan. 2011. "Regional Perspective on Rainfall Change and Variability in the Central Highlands of Ethiopia, 1978-2007." *Applied Geography* 31(1): 329–38.

Scoones, Ian. 1998. *Sustainable Rural Livelihoods a Framework for Analysis*. IDS Working Papers. Sussex. https://opendocs.ids.ac.uk/opendocs/bitstream/handle/123456789/3390/Wp72.pdf?sequence=1.

———. 2015. *Sustainable Livelihoods and Rural Development*. Rugby: Practical Action Publishing.

Sharp, Kay, A Rahman, C Sage, and J Swift. 1991. *Migration and Food Security: A Background Paper*. Sussex: University of Sussex.

Spence, Patric R. 2004. "On The Reporting Of Reliability In Content Analysis." *Journal of Modern Applied Statistical Methods* 3(1): 234–38.

Stark, O. 1991. *The Migration of Labor*. Oxford: B. Blackwell.

Stern, Nicholas T. 2007. *The Economics of Climate Change. The Stern Review*. Cambridge. http://mudancasclimaticas.cptec.inpe.br/~rmclima/pdfs/destaques/sternreview_report_complete.pdf.

Suhrke, Astri. 1993. "Pressure Points: Environmental Degradation, Migration and Conflict." *Peace and Conflict* (June 1991): 1–43.

Taddese, Girma. 2001. "Land Degradation: A Challenge to Ethiopia." *Environmental Management* 27(6): 815–24.

Taffesse, Alemayehu Seyoum, Paul Dorosh, and Sinafikeh Asrat. 2012. *Crop Production in Ethiopia: Regional Patterns and Trends*. ESSP II Research Note. Addis Ababa. http://reliefweb.int/sites/reliefweb.int/files/resources/essprn11.pdf.

Tekle, Kebrom. 1999. "Land Degradation Problems and Their Implications for Food Shortage in South Wello, Ethiopia." *Environmental Management* 23(4): 419–27.

The World Factbook. 2015. "Ethiopia." https://www.cia.gov/library/publications/the-

world-factbook/geos/et.html (May 7, 2016).

Todaro, Michael P. 1969. “A Model of Labor Migration and Urban Unemployment in Less Developed Countries.” *The American Economic Review* 59(1): 138–48.

Westing, Arthur H. 1992. “Environmental Refugees: A Growing Category of Displaced Persons.” *Environmental Conservation* 19(03): 201–7.

Wilkinson, Sue. 2006. “Focus Group Research.” In *Qualitative Research : Theory, Method and Practice*, ed. David Silverman. London: SAGE Publications, 177–200.

World Bank. 2009. *Ethiopia: Climate Risk Factsheet*. http://siteresources.worldbank.org/INTAFRICA/Resources/Ethiopia_Country_Note.pdf.

———. 2010. *The Ethiopian Urban Migration Study 2008 : The Characteristics, Motives and Outcomes of Migrants to Addis Ababa*. http://siteresources.worldbank.org/ETHIOPIAEXTN/Resources/Urban-Migration-Final-Version8242010.pdf.

———. 2011. *Vulnerability, Risk Reduction, and Adaptation to Climate Change. Ethiopia*. http://sdwebx.worldbank.org/climateportalb/doc/GFDRRCountryProfiles/wb_gfdrr_climate_change_country_profile_for_ETH.pdf.

Zenawi, Meles. 2006. “Prime Minister Meles Zenawi Africa Task Force Speech.” http://www.ethioembassy.org.uk/Archive/Prime Minister Meles Africa Task Force speech.htm (May 9, 2016).

Appendices

I. Questionnaire

1. Household, Respondent and Interviewer Information

Question code	Question	Codes	
q1	**HH-ID (by Lisa)**		
q2	**Full name of the respondent**		
q3	**Age of the respondent**		
q4	**Sex of the respondent**	1	Female
		2	Male
q5	**Respondent's position in the household**	1	Household head
		2	Spouse of household head
		3	Child
		4	Parent
		5	Other relative
		6	Worker/househelper
		7	Other *(specify)*
q6	**Interviewer's name**		
q7	**Interview date**		
q8	**Interview Location**	1	Public Place
		2	Respondent's house
q9	**Interview start time**		
q10	**Interview end time**		

2. Basic Individual Characteristics

	q11	q12	q13	q14	q15	q16	q17	q18	q19	q20
ID	**How many people belong to your HH?**	**First Name**	**Relationship to HH head**	**Age**	**Sex**	**Marital Status**	**Religion**	**Literacy Status**	**Highest level of Education**	**Main occupation**
	Indicate the number of people in the HH		1 HH head 2 Spouse of HH head 3 Child 4 Parent 5 Grandchild 6 Other relative 7 Worker/ Househelper 8 Other *(specify)*		1 Female 2 Male	1 Single 2 Married 3 Widowed 4 Separated/divorced 5 Other *(specify)*	1 Orthodox 2 Muslim 3 Protestant 4 Catholic 5 Other *(specify)*	1 Neither read nor write 2 Read only 3 Read and write	1 No formal schooling 2 Primary incomplete 3 Primary complete 4 Secondary incomplete 5 Secondary complete 6 Vocational training 7 Preparatory incomplete 8 Preparatory complete 9 University 10 University +	*OPEN ANSWER*

3. Land Use

	Question	Codes	
q21	**What is the current size of your farmland (including land for eucalyptus trees)?**	*Express in Timad*	
q22	**Which are the 5 main products (in terms of income generation) you grow?** **(more than one answer possible)**	1	Barley
		2	Wheat
		3	Potato
		4	Lentils
		5	Teff
		6	Maize
		7	Forage
		8	Sorghum
		9	Vegetables
		10	Beans
		11	Eucalyptus
		12	Fruits
		13	Livestock
		14	Other *(specify)*
q23	**What rainy season do you use?**	1	Short rainy season (Belg)
		2	Long rainy season (Meher)
		3	Both

Please indicate for the following types of land:		**1. Do you have this type of land?** **1 = Yes** **2 = No**		**2. How has the area of this land changed over the past 5 years?** **1 = Stable** **2 = Increased** **3 = Decreased**		**3. If the area has changed, why?**
Rainfed cropland (only food and fodder crops)	**q24**		**q25**		**q26**	
Irrigated cropland (only food and fodder crops)	**q27**		**q28**		**q29**	
Fallow land	**q30**		**q31**		**q32**	
Forested land (incl. eucalyptus)	**q33**		**q34**		**q35**	
Grassland	**q36**		**q37**		**q38**	

4. Livelihood Strategies

				Ranking
q39	**In the <u>past 12 months</u>, how did your household make a living?** *Please indicate all livelihood sources of the household and rank up to three main sources*	1	Crop production (for own HH consumption)	
		2	Crop production (for sale)	
		3	Livestock production (for own HH consumption)	
		4	Livestock production (for sale)	
		5	Daily labour	
		6	Trade	
		7	Renting land to other farmers	
		8	N'jera selling	
		9	Pottery (incl. cover making)	
		10	Selling wood	
		11	Brewing	
		12	Other *(specify)*	
q40	**In the <u>past 5 years</u> (in a normal year without drought), how did your household make a living?** *Please indicate all livelihood sources of the household and rank up to three main sources*	1	Crop production (for own HH consumption)	
		2	Crop production (for sale)	
		3	Livestock production (for own HH consumption)	
		4	Livestock production (for sale)	
		5	Daily labour	
		6	Trade	
		7	Renting land to other farmers	
		8	N'jera selling	
		9	Pottery (incl. cover making)	
		10	Selling wood	
		11	Brewing	
		12	Other *(specify)*	
q41	**Have your household's strategies to make a livingchanged in the past five years?**	1	Yes	
		2	No *(go to q43)*	
q42	**<u>Why</u> have your household's strategies changed?**		*OPEN ANSWER*	

5. Land Productivity

q43	q44	q45	q46	q47	q48	q49	q50	q51	q52	q53	q54
Crop code	**Area in Timad (all land, rented and owned)**	**Quantity harvested in 2007/2008**	**Quantity harvested in a normal year within the past 5 years**	**Why is the harvest in 2007/2008 higher or lower than in a normal year within the past 5 years?**	**Overall, has the production of this crop increased or decreased in the years BEFORE the drought (general trend)**	**How much of the harvest did you use for your own HH consumption in 2007/ 2008?**	**How much did you use for your own HH consumption in a normal year (within the last 5 years)?**	**Have you introduced land interventions affecting this crop?**	**What kind of land interventions have you introduced?**	**Have Land interventions improved the production of this crop?** *Please check for contradictions with q48*	**Do you think the situation will improve again?**
crop code (see below)	*If same Land used for different crops, indicate with 'MC'*	*Quantity in Ssak or kg*	*Quantity in Ssak or kg*	*OPEN ANSWER*	1 Increase 2 Decrease 3 Same	1 All 2 Most of it 3 Half 4 Less than half 5 Nothing	1 All 2 Most of it 3 Half 4 Less than half 5 Nothing	1 Yes 2 No *(go to q54)*	*OPEN ANSWER*	1 Yes 2 No	1 yes *(specify)* 2 No *(specify)*

6. Climate Change

	Have you perceived any climatic changes within the past 10 years?				
	Climate aspect	**Increase**	**Decrease**	**Stable**	**I don't know**
q55	Frost and hail events				
q56	Rainfall variability (belg)				
q57	Rainfall variability (meher)				
q58	Total amount of rainfall (belg)				
q59	Total amount of rainfall (meher)				

7. Drought

q60	**How has <u>your household</u> been affected by the 2007/2008 drought?**			*OPEN ANSWER*	
q61	**What were the impacts of the drought for your household?**			*OPEN ANSWER*	
					Specify
q62	**How did your household secure livelihood as a response to the drought?** **(more than one answer possible)**	q62a	1	Livestock sales	
		q62b	2	Other assets sales	
		q62c	3	Non-farm work (without migration)	
		q62d	4	Food aid	
		q62e	6	Reducing expenses of the HH	
		q62f	7	Increase financial support from non-household family members	
		q62g	8	Migration	
		q62h	9	Nothing	
		q62i	10	Others	

8. Crop Sales and Purchases

q63	Do you still have food from the 2006/2007 harvest in store?	1	Yes *(go to q65)*
		2	No
q64	Which month and year did it finish?	*OPEN ANSWER*	
q65	Since the harvest of 2007/2008, have you bought any food or fodder crops?	1	Yes
		2	No *(go to q67)*
q66	What type of food crops/fodder crops have you bought?	*OPEN ANSWER*	
q67	Will the harvest from 2007/2008 be sufficient for the household until this year's (2008/2009) harvest?	1	Yes
		2	No

	For the past five years, please indicate the years that:	
q68	a) You bought foodstuff and you didn't sell	
q69	b) You did not buy foodstuff and you did not sell either	
q70	c) You did not buy foodstuff but you sold	
q71	e) You received food aid (including PSNP and others)	

9. Overview of Relatives (from the Household) who moved away permanently

	q72	q73	q74	q75	q76	q77	q78	q79	q80	q81	q82	q83	q84
ID	**Relation to HH head**	**Main occupation (before leave)**	**Destination**	**Type of destination**	**When did he/she leave?**	**Reason**	**Do you receive remittances from this HH member?**	**Type of remittances**	**How often did you receive remittances over the past 12 months?**	**What was the monetary value of remittances in the past 12 months?**	**Was the monetary value of remittances in a normal year during the last 5 years higher or lower?**	**How were remittances used in your HH in the past 12 months?** (more than one answer possible)	**How were remittances used in a normal year within the last 5 years?** (more than one answer possible)
	1 Child	1 Farmer	Name of destination (Country, approx. distance from here)	1 Village	*Year*	*OPEN ANSWER*	1 Yes, regularly	1 Money	*OPEN ANSWER*	*OPEN ANSWER*	1 Higher	1 To buy food	1 To buy food
	2 Spouse of HH head	2 Employee/ Worker		2 Town/city		***Identify root causes***	2 Yes, but not regularly	2 Foodstuff			2 Lower	2 To pay for other daily needs	2 To pay for other daily needs
	3 Sister	3 Non-agricultural self-employment		3 Don't know			3 No *(go to q81)*	3 Consumer goods			3 Same	3 To buy clothes and other durable goods	3 To buy clothes and other durable goods
	4 Brother							4 Educational Fee				4 To invest in farming	4 To invest in farming
	5 Other relative *(specify)*	4 Non-paid HH member						5 Other *(specify)*				5 To invest in non-farming	5 To invest in non-farming
												6 To pay educational fees	6 To pay educational fees
												7 To pay for medical treatment	7 To pay for medical treatment
												8 Other *(specify)*	8 Other *(specify)*

10. Overview of HH Members who migrate temporarily

	q85	q86	q87	q88	q89	q90	q91	q92	q93	q94	q95	q96
ID	**Relationship to HH head (see q11)**	**Name (see q12)**	**For what period of time did she/he leave (the last time)?**	**Where did he/she go?**	**Type of Destination**	**Did he/she leave before?**	**How often has he/she left within the past five years?**	**Why has she/he left?**	**Why did he/she return?**	**Does your HH receive financial support from this HH member?**	**What was the monetary value (from the last stay away)?**	**How were the additional sources used?** (more than one answer possible)
	1 HH head 2 Spouse of HH head 3 Child 4 Grandparent 5 Other relative 6 Worker/ Househelper 7 Other *(specify)*	*Name of HH member*	*Please indicate the months and year(s) of leave*	*Name of destination (and approx. distance)*	1 Village 2 Town/City 3 don't know	1 Yes 2 No *(go to q92)*	*OPEN ANSWER*	*OPEN ANSWER* ***Identify root causes***	*OPEN ANSWER*	1 Yes, regularly 2 Yes, but not regularly 3 No *(go to q97)*		1 To buy food 2 To pay for other daily needs 3 To buy clothes and other durable goods 4 To invest in farming 5 To invest in non-farming 6 To pay educational fees 7 To pay for medical treatment 8 Other *(specify)*

11. Own Perceptions

q97	**q98**	**q99**
In principle, would you be willing to move away?	Under what circumstances and why would you move away?	What makes you stay?
1 Yes 2 No	*OPEN ANSWER*	*OPEN ANSWER*

12. Economic Capital

Please mention explicitly that we do independent research and that we are not sent from the government. We give our word of honour that we will treat this information confidentially

	What type of assets and Livestock do you have?			
		Type of asset	**Quantity**	**Today you own more/less/the same of this asset than 5 years ago? (1=more, 2=less, 3=same)**
q100	1	Cattle		
q101	2	Goats or sheep		
q102	3	Poultry		
q103	4	Donkey		
q104	5	Honey bees		
q105	6	Other animals *(specify)*		
q106	7	Radio		
q107	8	Bicycle		
q108	9	Mobile phone		
q109	10	(Rental) land		
q110	11	Improved Cooking Stove		
q111	12	Sofa Set		
q112	13	Corrugated iron sheet roof		
q113	14	Grass Roof		
q114	15	Other *(specify)*		
q115	**What is the level of income of your HH Total per year?** (incl. all HH members' incomes but excluding remittances)?		***ANSWER in BIRR***	
q116	**How does the amount of income vary between different months?**		*Indicate minimum and maximum as well as months*	
q117	**Do you have any savings?**		1 Yes 2 No *(finished)*	
q118	**What kind of savings do you have?**		1 Money on bank account 2 Self help group (e.g. Edir) 3 Other *(specify)*	
q119	**What is the level of savings that you have?**		***ANSWER in BIRR***	

13. Satisfaction with Government Activity

	In general, have you been satisfied with the government's response to the drought?	1 Yes *(why)*	
		2 No *(why not)*	

End of the questionnaire

II. Coding scheme

In the section about **livelihood resources**, there was one open question regarding the reasons for a strategy change. When respondents indicated that they changed their livelihood strategies over the past five years, they were asked to specify why they did. Most of the respondents referred to the drought as a reason to change strategies. Therefore, I only developed the codes *Drought* and *Other*.

In the section about **drought**, including *q60* (drought effect), *q61* (drought impact), and *q62* (coping strategies), I needed to make some adjustments. It turned out that the answers from q*60* and *q61*, as well as the answers from *q61* and *q62*, were overlapping in some subject areas. For *q60*, I set up the codes *Decrease of food crop production, Decrease of fodder crop production, Water shortages, Deteriorating livestock conditions, Not affected*, and *Other*. Some respondents also mentioned the drought's effect on their livestock in *q61*. However, the drought's effect on farmers' livestock was rather an answer to question *q60*. Therefore, I shifted answers about the drought's effect on livestock conditions from *q61* to *q60.*

A similar difficulty arose for the answers from *q61* (impact) and *q62* (coping strategies). While farmers should elaborate on the drought's impact on their household in *q61*, they should specify on different strategies of the household to mitigate the drought's impact in *q62*. In reality, these questions turned out to be more difficult to separate from each other than in the artificial division from our questionnaire. We had considered the reduction of household expenses to be one strategy amongst others. However, a reduction of expenses for clothes and food appeared to be rather an impact of the drought than a (voluntarily chosen) strategy of the farmers. Therefore, I considered the inability to buy clothes or educational material as an impact of the drought and not as a household strategy to mitigate the drought's impact. Consequently, I deleted *q62e* (reducing expenses of the household) from the preformulated response options in q62 (coping strategies). Hence, for *q61* (drought impact) I set up the codes *Food Shortage, Decrease of wealth, Health Issues, Impairment of education,*

Reduced spending capacity for other basic needs, Changing market prices, No impact, and *Other*. The codes *Decrease of wealth* and *Deteriorating livestock conditions* are closely interrelated. However, the artificial separation into several codes makes it possible to differentiate between varying degrees of severity.

For both questions *q60* (drought effect) and *q61* (drought impact), multiple answers were possible. Therefore, I needed to dummy code *q60* (into seven different items) and *q61* (into eight different items) each with the response options *yes* or *no*, as they have the form of categorical variables.

Also, the questions *q62a* to *q62i* (different coping strategies) required some adjustments. Every item contains one possible adaptation strategy. In a first step, respondents had to state whether the strategy is applicable or not for their household. If they applied the strategy, they were asked in a second step to specify how they applied the strategy. However, the strategies from *q62f* (increase financial support from non-household family members), *q62h* (Nothing), and *q62i* (Others) were not applied by any farmer or by only less than five farmers, so that a codification of the answers is not necessary. In the case of *q62a* (Livestock sales), the answers are difficult to schematize as some farmers specified on the number of animals they sold, while others specified on the date or merely the fact of sale. Therefore, this question also remained uncoded and only information regarding whether the strategy was applicable or not, was used. In the case of *q62b* (other assets sales), it turned out that the only other asset farmers sold was wood. Hence, this question also remained uncoded and only the information on whether the strategy was applicable or not was used. The answers from question *q62e* (reducing expenses of the household) were deleted (see previous paragraph) and also remain uncoded. The answers for *q62g* (migration) were not coded since detailed information on migration processes was captured in the two separate migration sections.

Consequently, only *q62c* (non-farm work) and *q62d* (food aid) needed to be coded. For *q62c* (non-farm work), I set up the codes *Daily labour, Trade, Wage employment, Injera*[21] *baking (including cover making),* and *None.* During the interviews and conversations with local experts, we became aware of an important difference in food aid and food for work programmes. The latter is called Productive Safety Net Programme (PSNP) and is an integral part of Ethiopian food security politics. For people in areas of high risk of acute malnutrition,

[21] Injera is the traditional Ethiopian flatbread usually made with teff flower. It is an essential basis for every meal in Ethiopia.

the relief programme provides general food distributions (see Chapter 3), which are colloquially referred to as food aid. I set up the codes *PSNP*, *Relief, Both,* and *None* for *q62d* (food aid).

In the section **Perception of migration**, I needed to code the two open questions *q98* (reason to migrate) and *q99* (reasons to stay). Question *q98* asked under what circumstances the respondents could imagine moving somewhere else. I developed nine codes in the form of different statements to cover all possible answers. In *q99*, participants were asked what makes them stay in the *kebele* rather than moving somewhere else. Correspondingly, I developed eight codes in the form of statements for *q99.*

In the section **Satisfaction with Government Activity**, the farmers were asked to respond whether they were satisfied with the government's response to the drought. Subsequently, they should elaborate on their judgement. When examining the answers, I figured out that farmers who were satisfied with government policies mainly pointed to their own benefit of PSNP or the relief Programme. There was little variance among their answers. By contrast, answers from farmers who were not satisfied were more diverse and did not only refer to the personal disadvantages. Therefore, I decided only to code the answers from farmers who were not satisfied with the government support. I developed the codes *Inappropriate amount and timing, Not included, Selection criteria are not fair, It doesn't address the problem properly, Satisfied,* and *Other.*

There were two different sections for **migration** processes: one covering permanent migration and one covering temporary migration. The respondents were asked to provide information on migration histories for all household members including themselves. Household members who had a migration history in the past were captured in the temporary migration section. For both sections, the same codes were used for questions *q74* and *q88.* In these questions, we asked respondents about the destination of their temporary or permanent migration. I used the following codes to classify different destinations: *The Gulf, City in the same province, City in different province*, *Capital* and *Rural area,* and *Other.* Concerning the time of leave, the codification differs. In the case of permanent migration, I simply use the year of leave. In the case of temporary migration, I use both the year of leave and the duration of their stay. Therefore, I split this item into two items, one for the year of leave and one for the duration of their stay (in months). For both sections, I needed to dummy code the questions about the type of remittances (*q82, q84* and *q96*) each with the response options *yes* or *no* as they have the form of categorical variables.

For the both **migration** sections (permanent and temporary), I needed to code the questions about the reason for migration (*q77*and *q92*), which captures the reason for the migrant's leave. Therefore, I developed the codes *To generate income for the household, To become independent of the household, Education, Drought, Marriage (q77), Resettlement Programme (q92), Military obligation (q92), Don't know,* and *Other.*

For the **temporary migration** section, I also needed to code questions about the reason for return (*q93). I* set up the codes *Health conditions, Family, Task completed, Government change, Expectations not fulfilled,* and *Other.*

1. q60: How was your household affected by the drought?

Code	Description
Decrease in food crop production	A "loss" or "decrease" in production, productivity or yields of food crops. This code covers all intensities of production losses, from "great" to "complete" losses and production losses without explicitly mentioning the severity. It also includes all types of food crops from "teff" to "barley" to "food crops" and "crops" in general.
Decrease in fodder crop production	A decrease in fodder crops including "forage", "fodder", "grass" and "hay". This code does not cover a lack of fodder for animals (which belongs to the next question).
Water shortage	Water shortages including shortages of "drinking water", "irrigable water" or "spring water".
Not affected	Some people considered themselves not to be affected or only insignificantly affected because they had a relatively good production, effective land interventions or irrigated land. All answers from people who consider themselves not to be affected are covered by this code.
Other	All answers that do not fit into one of the respective codes are covered by this code.

2. q61: What were the impacts of the drought for your household?

Code	Description
Food Shortage	A shortage of food including different terms like "starvation", "malnutrition" or "nutrition problems". Some respondents also specified their situation e.g. by telling that they reduced the number of their daily meals.
Decrease of wealth	All answers about a decrease in wealth including general statements about "becoming poor" or loosing a "luxurious life" just like more specific answers about a decrease of "income from selling grain", "save money", and also a loss of income due to decreasing livestock productivity.
Health Issues	All respondents who pointed to the drought's direct or indirect impact of household members' health. While some respondents mentioned specific diseases like "water-borne diseases", others just state that "it will be hard to

	buy medicine" which causes a deterioration of the household members' state of health.
Deteriorating livestock conditions	All information on the deterioration of the health condition of farmers' livestock. It also covers answer from *q60* about how the household was affected by the drought. This code covers a broad range of answers from a lack of forage for the livestock, the livestock becoming "skinny" or "shrinking" to more serious diseases like "animal pest" or livestock death irrespective of the number of livestock that died and the animal species.
Impairment of education	All answers about the impairment of household members' education as the household cannot "afford the educational material" or students simply "stop their education".
Reduced spending capacity for basic needs	Some respondents mention that they cannot afford "clothing" and "other daily needs" anymore.
No impact	All respondents who consider that the drought did not have an impact on their household.
Other	All answers that do not fit into one of the respective codes – mainly due to very personal circumstances – are covered by this code.

3. q62c: How did your HH secure livelihood as a response to drought (non-farm work)?

Code	Description
Daily labour	Daily labour activities that farmers are engaged in ranging from "weeding crops", "carrying stones" and "construction" to daily labour within a farmers' cooperative.
Trade	The code trade refers to all trade-related activities including small-scale as well as larger-scale trading activities.
Wage employment	The code wage employment covers all answers from farmers who have a fixed employment as e.g. as a guard.
Injera baking (includeing cover making)	This code refers to all income-generating activities related to injera making including the pottery of the traditional cover for injeras *Akimbalo*.
None	All respondents who did not respond to the drought via non-farm labour are covered by this code

4. q62d: How did your HH secure livelihood as a response to the drought (Food aid)?

Code	Description
PSNP	All farmers who are beneficiaries of the PSNP.
Relief	All farmers who are beneficiaries of the National Relief Programmeme.

Both	All farmers who are beneficiaries of PSNP and the National Relief Programmeme.
None	All farmers who are not beneficiaries of either of the programmemes.

5. q98: Under what circumstances would you move away?

Code	Description
1: If environmental conditions continued like this or even got worse, I would move away.	All farmers who directly or indirectly referred to environmental conditions as one reason to move away. While some farmers explicitly referred to "droughts" or a "lack of rainfall", others just talked about deteriorating conditions more generally.
2: If food security in my household deteriorated, I would move away.	All answers about a deterioration of food security as a reason to move away. It includes all statements about a shortage of food and water. This refers also to food shortages resulting from a suboptimal food aid policy.
3: If I were young and healthy, I would move away.	This refers to all statements – mainly from elderly people – who could only imagine moving away if they were in a better state of health. While many farmers considered themselves simply "too old" and would move away if they were younger, others referred to a specific disease which makes them unable to move and would only move if they got better.
4: If my social life deteriorated, I would move away.	This code includes statements about the social life of the *kebele* as a reason to move away. It includes statements about people from the *kebele* in general as well as statements about the family in particular.
5: If economic conditions somewhere else were more promising, I would move away.	This code includes answers about a "better income", a "better life" or a "better future" outside the *kebele* as an incentive to move somewhere else.
6: I have already planned to move away soon.	This code includes all farmers who already have the plan to move away soon irrespective of their destination and the purpose of their move.
7: As soon as my children are old enough to take care of themselves, I would like to move away.	This code includes all farmers who plan to move after their children are grown up so that they don't have to take care of them anymore.
8: I don't want to move under any circumstances.	This code includes all farmers who cannot imagine moving under any circumstances.
9: Other	All answers that do not fit into one of the respective codes – mainly due to very personal circumstances – are covered by this code.

6. q99: What makes you stay?

Codes	Description
1: The production from my farmland is relatively good.	This code refers to all farmers who state that their agricultural production is despite the drought relatively good and that it is satisfactory for them. This code only covers statements that explicitly refer to the production or productivity and not to farmland as an asset in general.
2: My farmland is an important asset I don't want to give up.	All farmers who regard their farmland as an important asset that they don't want to lose. While some farmers explicitly say that they are afraid of losing their farmland, others just refer to their farmland as an asset they have for income generation.
3: I don't think the living conditions will be better elsewhere.	All farmers who don't think they would find a better job somewhere else and therefore prefer to stay in their *kebele*. This code also includes all farmers who state that they will put effort into improving the situation in their place.
4: I am afraid of moving somewhere else.	All farmers who are afraid to move somewhere else. While most farmers are more broadly "afraid of the unknown" others refer to specific experiences (from their relatives, their friends or themselves) that make them afraid of going somewhere else.
5: My cultural and social life makes me stay here.	This code includes all statements with cultural references. While some farmers simply "like their place" or their "community", others are confident that god will help them if they stay in their place.
6: I need to support my family.	This code includes all farmers who do not consider moving somewhere else an option because they need to "teach their children" or more generally "support family members"
7: I am not in the state of health to move somewhere else.	This code includes all farmers who do not consider moving somewhere else an option because of their state of health or because they are advanced in years.
8: Nothing	This code includes farmers who already made the decision to move somewhere else and don't see a reason to stay in the *kebele.*
9: Other	All answers that do not fit into one of the respective codes are covered by this code.

7. q74/q88: Migrant's destination

Code	Description
Gulf states	All migrants who moved to one of the Gulf states.
City in the same province	All migrants who moved to a city in Wollo including bigger cities like Dessie, Kombolcha or Weldiya as well as smaller cities like Hayk or Wuchale.
City in different province	All migrants who moved to a city in another province in Ethiopia either in Amhara or in a different region.
Capital	All migrants who moved to the capital Addis Ababa.
Rural area	All migrants who moved to a rural area irrespective of the region.

9. q77: Reason for permanent migration

Code	Description
To generate income for the household	All migrants who moved away to generate additional income for the household. The reason why the household needs additional income may vary from "too little farmland" or "not enough production" to "no work in the *kebele*" looking for "better working conditions".
To become independent of the household	All migrants who moved away to become financially independent of the household irrespective of their motivation ranging from the fulfillment of "luxurious needs" to an "escape of the situation in the household"
Education	All migrants who moved away to secure education irrespective of the educational level. This code concerns family members whose parents cannot "afford educational material" as well as household members who move away because there is not "free spot at South Wollo university".
Marriage	All migrants who moved away because of marriage.
Drought	All respondents who claim the drought to be a direct or indirect reason for the migrant to leave the *kebele.*
Don't know	All migrants where the motivation is not clear because the respondent did not know the actual cause.
Other	All answers that do not fit into one of the respective codes are covered by this code.

10. q92: Reason for temporary migration

Code	Description
To generate income for the household	All migrants who moved away to generate additional income for the household. This includes household members who moved away for "daily work to earn money" as well as household members whose land was "not

	very productive".
To become independent of the household	All migrants who moved away to become financially independent of the household irrespective of their motivation ranging from "searching a better life" to an "escape of the situation in the household"
Education	All migrants who moved away to secure education irrespective of the educational level. This code covers "religious education" as well the inability "to buy educational material".
Resettlement Programme	All migrants who were forced to move away as part of the former government's resettlement programme.
Military obligation	All migrants who moved away because they had the obligation to serve as a "soldier" or to "get military training".
Drought	All respondents who claim the drought to be a direct or indirect reason for the migrant to leave the *kebele.*
Other	All answers that do not fit into one of the respective codes are covered by this code.

11. q93: Reason for return

Code	Description
Health conditions	All migrants who returned because they got sick or did not stand the conditions at the destination. This can refer to a concrete disease like "malaria" or because the "climate of the area was not safe".
Family	All migrants who returned because they needed to support their families. This may be simply "because of their family" or more specifically because they wanted to "support their mum"
Task completed	All migrants who successfully completed the task at their destination. In some cases people had "finished their work" or because they "finished education".
Government change	All migrants who returned after a government change which in many cases gave the "permission to come back".
Expectations not fulfilled	All migrants who were disappointed because their expectations at the destination were not fulfilled and therefore came back to the *kebele.* Often the salary was not "what they had expected" or they "didn't get daily work".
Other	All answers that do not fit into one of the respective codes are covered by this code.

III. Focus Group Discussions

The guideline as well as the minutes from the FGD can be found on the enclosed CD.

1. Reasons for Out-Migration

Argument	Guguftu	Abasokotu
Unemployment	- "Even the China construction company said, we are doing with cheap price labour and stone" - "there is no daily labour here" - "unemployment has increased" - "most young people have no work" - "government's interventions are not sufficient"	- "less support programmes from the government to create employment opportunities"
Not enough capital to create work around here	- "even to be a trader you need to have 2000 birr capital and there is a payment to get a license"	- "they have no money to do income generating activities here" - "lack of capital to do own work"
Taxes are too high to create working opportunities here	- "we can't do petty trading because the tax is discouragingly high" - "we can't do petty trading because the tax is too high" - "high tax for commodity and daily work here" - "the license of trade and tax is really high" - "for petty trading you need a license and the tax is really high" - "this year farmland taxes are high"	
Land size is too small to cover the family's needs	- "small land size" - "land size of the hh is too small to cover the expense of a big family" - "because of the farmland size…varies between 1 and 12 timad" - "most young people don't have enough farmland"	- "farmland size and productivity do not match the family's needs" - "small farm size which is not enough for the whole family" - "because of small farmland size…because of Derg" - "the family's land is not enough" - "little income due to small farmland" - "family size and production are not coherent"
Family size (too big)	- "because the size of my family is big and cannot fulfil my demands"	- "Large families don't get enough money for everyone…so they want to become independent."

		- "Large families don't get enough money for everyone…so they want to become independent."
Environmental hazards (droughts) happen frequently	- "droughts are happening frequently" - "pockets are empty because environmental hazards happen frequently" - "because droughts frequently happen" - "because the droughts frequently happen since 1991" - "droughts take frequently place" - "we face production decreases by the cause of droughts" - "because we face production decreases by the cause of droughts" - "shortage of rainfall" - "when the rainfall stopped the crop will fail…migration is used to compensate the rain shortage" - "when shortage of rain comes, migration starts" - "because nature here is no good…there may be a shortage or it starts late" - "when the rainfall stopped the crop will fail". - "the major reason is climate change and the resulting droughts". - "natural hazards happen frequently" - "natural hazards happen frequently"	- "because of natural hazards production decreased" - "because of natural hazards production decreased" - "to live from agricultural income only is not very stable due to natural hazards" - "because of natural hazards crops may fail". - "drought, crop pest, crop failure, crop diseases" - "because of drought production decreased" - "because of natural hazards the crops fail" - "because of natural hazards the crops fail" - "because of natural hazards the crops fail" - "because of natural hazards" - "natural disorder an decrease in production…market prices rise"
Dependent on Belg rain	- "we only produce with Belg rain and not Meher which is good"	
To secure the future	"to secure the future of my life"	- "people want to build their own house for their future family" - "to build an own house and teach their children" - "to change the living conditions"
To get a better salary		- "Most young people don't want to do agricultural work because it doesn't generate much income" - "to get a good payment" - "the demand is higher than the hh

		income” - “they need to get income from somewhere else” - “to help their families” - “if you create work here, the salary is not good”.
Other	- “Because some children don’t get a score which is good enough for work at school”	- “Most young people don’t have a good score after 10th grade…so they don’t find a good job”. - “most people learn a lesson from those who moved away”

2. Assessment of Migration

Statement	Guguftu	Abasokotu
Positive connotation		
To become independent of the hh (create assets for the future)	- “I have to create a conducive environment for my future” - “being older than 18 you have to worry for your family and not always remain depdendent” - “live a better life in the future rather than living here without change”	
To overcome problematic times	- “you can fill your economic gap with migration” - “It is important to jump problems like drought” - “it is good to remove one’s problem rather than staying here and fear” - “it is useful to earn money to send back to your family until the situation improves again” - “to jump the worst problems” - “getting money and food is better than starving with the family” - “important solution to the current problem rather than staying here”	- “to fill the gap from the problem”
Better income	- “we can get a good amount of money in Arab countries”	- “you can buy fertilizer. Ox and other things”

	- "There is no work opportunities here"	
Support the family	- "I can buy new cloths for me and support my family" - "my son is somewhere and supports me" - "I can get money for my family"	- "to provide food for the family" - "important to buy ox for ploughing and supporting the family" - "I can support my family who raised me" - "my daughter helped me to change my house and build new corrugated iron roof" - "to change family life by sending remittances"
Future change		- "because there is no change here unless you go somewhere else" - "important to get a better life in the future" - "I could build a house with the money I got" - "movement is good for change" - "it's good to get money for future change" - "can be a life changer" - "to change yourself and your family" - "to fulfil my demand for my life" - "I could fulfil my demand" - "to change the families and ourselves" - "to get a future change" - "to get a better life in the future"
Negative Connotation		
Conditions elsewhere are dangerous	- "you will be segregated, you may be robbed" - "you may die in other locations where you wish to get a life change" - "if you get sick, no one is going to treat you" - "if you die there, you will be buried there" - "diseases, robbery and death"	- "you lose your freedom…you may suffer from sunburn or be provoked because you're a migrant". - "you don't know what problems you will face" - "mental disorder" -"I suffered when I was in Saudi Arabia" - "most migrants are mentally disordered when they come back"

	- "malaria and other diseases" - "malaria and other diseases" - "if you get sick, who will help?"	
Feeling alone	- "you may feel alone in another country" - "My feeling of being alone frequently happens" - "my family and friends are important to me"	
Life in the city is expensive	- "The living conditions of the city are expensive" - "high costs of living in the city" - "living conditions are costly" - "living conditions are costly"	
Working conditions are worse	-"the payment in other places is not proportional to the workload" - "because the conditions for daily work are not good" - "sometimes the employers don't give you the salary"	
Resettlement by the *derg* has demonstrated the negative effects of migration	- "The derg to me to Wellega without my interest…after we got liberation in 1983 my farmland was already allocated to other farmers" -"I was obliged by the *derg* without my interest…After I finished my stay there…I remained without farmland"	
Better conditions here	- "local air conditions"	- "it's better to live here with our language and our culture"
Not an adequate solution		-"is not a solution to the problems we have here" - "migration is not a solution to a problem"
Keep the farmland		- "we can keep our farmland…no one can take it"

3. Assessment of Future Trends

Statement	Guguftu	Abasokotu
Increase		
Because government will open the borders again	- "when the government opens the border it will increase	- "because the government is discussing to open the borders again" - "because the government is discussing to open the borders again" - "as soon as the government opens the border" - "after the government reached a consensus"
Due to climatic conditions	- "because of droughts becoming more frequent" - "production is low" - "production is decreasing" - "even though the rain has started, the production will not be much" - "I don't believe the situation will be good" - "even though the cloud is coming, not much rain has been produced" - "because of production decreases" - "we are dependent on nature/rainfall and nature is getting worse and worse"# - "frequency of drought"	- " it will be increasing because there are still no good seasons"
Income here is not sufficient	- "young people finish their learning and remain without work here" - "most young people despair to get good living conditions here" - the production is only barley and can't fulfil conditions here"	- "it will increase to make a living" - "we have no other cash income" - "not all unemployed get a working chance by the government"
High living costs		- "material costs or commodity costs increase from week to week" - "living standards are more expensive"

		- "costs for educational material increase" - "costs for educational material increase"
No employment opportunities here	- "because no employers here who could hire people" - "there is no job opportunities here" - "there are no employment opportunities here for young people" - "there are no employment opportunities here for young people" - "there is no credit opportunity here for young people"	
Family can't fulfil demand	- "most young people's demand can't be fulfilled by family"	
Decrease		
Employment in cooperatives (government)		- "most men get employment in cooperatives here" - "most men get employment in cooperatives here" - "most men get employment in cooperatives here" - "most men get employment in cooperatives here" - "there are different cooperatives here" - " a lot of persons earn money from cooperatives" - "most young people can get a stable life with money from cooperatives" - "government cooperatives for young people are an adaptation strategy"
Natural hazards get better	- "this year Beld season has already started with a good amount"	- "this year is already less"
Government strategies	- "government is creating different employment opportunities"	- "work opportunities created by the government" - "because government has a strategy to

		combat migration" - "because government has a strategy to combat migration" - "government creates employment opportunities" - "most peoples' awareness for small opportunities that generate income here is growing" - "most peoples' awareness for small opportunities that generate income here is growing" - "government provides seed, capital and training"

IV. Selection Criteria for Participation in the Focus Group Discussions

1) Selection criteria for Abasokotu

- Women with a migration history to the **Gulf states** (Saudi Arabia, Qatar, Kuwait etc.).
- People who have household members that moved away **permanently** (not to the Gulf states) and send **remittances.**
- People who have a **temporary** migration history (due to daily labour, trade etc somewhere else).
- Person with a temporary migration history due to the former government's **resettlement programme.**
- Person who is **young** and considers migration as a future option (this person cannot be the household head nor being married).

2) Selection criteria for Guguftu

- People with a migration history directly related to the **2015 drought**.
- People who have household members that moved away **permanently** because the household couldn't afford their expenses anymore.
- People who have a **regular temporary** migration history (due to daily labour, trade etc somewhere else).
- Person with a temporary migration history due to the former government's **resettlement programme**

- Person who is **young** and considers migration as a future option (this person cannot be the household head nor being married)

V. Information from the Development Agents

1. Abasokotu

1. *How many people live in this village (approximately)?*
   6423
2. *How many people lived here 10 years ago (approx.)?*
   7550
3. *What is the main reason for this change?*
   - shortage of arable land to support the whole family so that young people move away to the cities for education, work etc.
   - migration to nearby cities and migration abroad
   - family planning (birth control)
4. *What role does in- or outmigration play in this village?*
   Minimum one person per HH
5. *In a normal year, when does the belg season start and end?*
   End of January until end of April
6. *In a normal year, when does the meher season start and end?*
   June until end of September
7. *When have belg and meher started and ended in 2015?*
   Belg: at the end of April for two days only; *Meher*: August 5th until September 28th
8. *What is the current situation of land degradation?*
   severe
9. *In terms of land degradation, what is the main problem (soil erosion, gullies, nutrient depletion etc)?*
   1. soil erosion, 2. low fertility (nutrient depletion), 3. gullies
10. *How is it compared to 10 years ago? What has changed and why?*
    - Generally, the agricultural production and productivity has increased due to the use of improved agricultural inputs (fertilizer, seeds etc.)
    - fertility improvements (use of organic ?, crop residues etc.)
    - implementation of different land improvement practices (soil conservation, biological treatments, terracing etc.)
    - gullies treatment
    - vegetation cover increased

11. *In general, what do people do for their living in this village?*
    - Generally they have their own land as main income source
    - mixed farming is possible (crop and livestock production)
    - have irrigation possibilities to grow vegetables for sell
    - off-farming activities (pottery, selling firewood, daily labour)
    - As Dessie Town is close-by, they can easily go there for daily labour etc.
12. *What were the impacts of the 2015 drought? How severe was the drought?*
    - Generally, a reduction of agricultural production
    - reduced forage production (grass, crop-residues etc.)
    - not as severe as in other villages
13. *How have the village people adapted to the 2015 drought? How did they manage this situation?*
    - selling other products like firewood, pottery
    - using irrigation for the production of vegetables for sell
    - trading cattle (ox, sheep, goats etc.)
    - support by PSNP and food aid
14. *In principle (not only for 2015): what is the main environment-related problem (related to soil, climate, water whatsoever)*
    - mainly climate variability associated with land degradation

2. Guguftu

1. *How many people live in this village (approximately?)*
   5045 (female: 2702, male: 2343)
2. *How many people lived here 10 years ago (approx.)?*
   No official numbers, approx. 4500
3. *What is the main reason for this change?*
   Guguftu is the only Kebele in the area that has a small "town" which offers a lot of important infrastructure (schools, hospital etc.). Thus, people from surrounding Kebeles are attracted to move to Guguftu. At the same time out-migration has increased especially among young people.
4. *What role does in- or outmigration play in this village?*
   People with a higher economic standard tend to move away to nearby cities (Kombolcha, Dessie etc.). Low-income farmers rather go for temporary migration to get additional income. According to Endris, there is an increasing tendency for migration die to two reasons: 1. People coming back from temporary stays (e.g. in Saudi Arabia) demonstrate how they could gain additional income, 2. Worsening conditions due to climate change.

5. *In a normal year, when does the belg season start and end?*
   January-February (until April latest, it normally rains around 15 days)
6. *In a normal year, when does the meher season start and end?*
   June 15th-September 1st (it almost rains every day)
7. *When have belg and meher started and ended in 2015?*
   Belg: not at all, Meher: August 8th-September 1st
8. *What is the current situation of land degradation?*
   People are facing problems with soil erosion, nutrient depletion, acidity (so farmers can only use acid-resistant crops), frost, pest (from rats), splash erosions
9. *In terms of land degradation, what is the main problem (soil erosion, gullies, nutrient depletion etc)?*
   Nutrient depletion
10. *How is it compared to 10 years ago? What has changed and why?*
    Generally, the soil fertility has decreased. 10 years ago the nutrient of soil was still good compared to nowadays. They didn't even have to use fertilizer, while productivity has now (even with fertilizer) decreased. One cause for this: They can't rotate crops due to rough climate conditions (which only allow for very few crops), which would be necessary to maintain the soil's nutrients.
11. *In general, what do people do for their living in this village?*
    Most people live from farming activities (crop and livestock production). some have additional income sources such as petty trade, carpentry, construction and other daily labour
12. *What were the impacts of the 2015 drought? How severe was the drought?*
    The drought had severe impacts on forage and crop production as well as access to water (drinking as well as irrigable water)
13. *How have the village people adapted to the 2015 drought? How did they manage this situation?*
    Consequently 3083 people have become part of the Relief programmeme by the government, the rest is part of the Productive Safety Net Programmeme
14. *In principle (not only for 2015): what is the main environment-related problem (related to soil, climate, water whatsoever)?*
    Frost and Drought