

**The environment-migration nexus reconsidered:
Why capabilities and aspirations matter**

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1. Gutachterin: Prof. Dr. Uta Ruppert
2. Gutachterin: PD Dr. Diana Hummel

Summary

This thesis develops a conceptual framework for a better understanding of the impact of slow-onset climate and environmental changes on human migration in developing countries. Its regional focus is on the West African Sahel, where the majority of the population depends on agriculture and thus is highly vulnerable to environmental changes. Migration from fragile environments is predominantly considered one of several household strategies to adapt to and minimise the risk of environmental stress. Based on qualitative and quantitative data from two selected rural study areas, Bandiagara in Mali and Linguère in Senegal, this thesis analyses the drivers of migration from the two areas.

The findings illustrate that, even though people highly depend on the natural environment, migration motives are manifold and that migration often is not a household strategy to cope with environmental changes. Although environmental conditions shape migration in the region and the migrants' support is crucial for most households, environmental stress plays a relatively small role as a driver of migration - at least in Mali, where it is considerably less important than in Senegal. On the contrary, migration is often driven by better opportunities elsewhere rather than by livelihood stressors in the home area. Particularly the migration of young people is often an individual rather than a household decision and influenced by individual aspirations, such as aspirations for consumer goods or a better future, rather than by environmental stress.

This thesis claims that research should consider people's capabilities to migrate or to stay as well as their individual aspirations and preferences - in addition to the household's needs and the opportunities elsewhere. This is important in order to explain why some people stay in and others migrate from an area affected by environmental stress, though living under similar conditions. Depending on people's capabilities to choose freely between staying and migrating and their preferences and aspirations for one or the other activity, people can either be "voluntary migrants", "voluntary non-migrants", "forced migrants" or "trapped people".

Moreover, it is important to consider social trends and transformation processes in the analysis of the linkages between environment change and migration. Higher education levels and aspirations to a "modern" lifestyle among young people, for instance, might decrease the impact of environmental factors on migration, despite worsening environmental conditions.

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1 Introduction - The environment-migration nexus and the contribution of this thesis

1.1 The relevance of the environment-migration nexus

The relevance of the topic

Today, headlines of African migrants desperately trying to enter Europe fill the media news. Images of migrants undertaking dangerous journeys by crossing the sea in overcrowded boats from Northern and Western Africa to Europe as well as images of desperate migrants storming the fences of the Spanish exclaves of Ceuta and Melilla in North Africa are frequently taken up in the media and shape the public opinion on migration from Africa to Europe. In addition, the emerging political and public debates on global warming and climate change emphasised their urgency with images of disaster-hit landscapes and suffering people. Images of drought-hit soils and starving people during severe droughts became synonyms for the Sahel region. Soon, the impact of climate change on human mobility moved into the centre of interest and concern and were boosted by predictions of tens or even hundreds of millions of environmental refugees as a consequence of climate in the 1990s (IPCC 1990a, 2007a; Myers, Kent 1995). During the last two decades, the linkages between population movements and climate change in particular - and environmental change in a more general manner - have experienced increasing interest and significance among scientists and politicians (Hummel et al. 2012; Laczko, Piguet 2014).

This thesis focuses on the impact of the environment on out-migration¹ in the West African Sahel. The West African Sahel is presumed to be one of the most affected regions by climate and environmental change in the future. Increasing temperatures and decreasing precipitation or increasing variability of rainfall are likely to cause land degradation, desertification and droughts, affecting food production, pasture productivity and the livelihoods of the people (IPCC 2007b; WBGU 2007; Mertz et al. 2010; Samimi, Brandt 2012; Brandt et al. 2013). Today, the West African Sahel is characterised by poverty, a high natural population growth and a high dependence on subsistence rain-fed agriculture, which makes them highly vulnerable to climatic and environmental changes (UNDP et al. 2009; Mertz et al. 2011; Sissoko et al. 2011; Samimi, Brandt 2012; de Sherbinin et al.

¹There is no clear definition of the two terms “mobility” and “migration”. Mobility is usually understood as an umbrella term for all types of movement (de Bruijn et al. 2001). However, the present thesis uses the terms migration and mobility synonymously.

2012; de Sherbinin 2014). At the same time, people in the Sahel are highly mobile. The region houses a high number of small-scale farmers and traditional nomad pastoralists. This study however, only includes the migration of sedentary farmers - crop producers and livestock breeders -, while it does not include nomadic transhumance because the motives and patterns for migration differ considerably between them. The impact of environmental changes on human populations in the West African Sahel is a major global concern and has attracted considerable research interest over the past decades on the linkages between the environment and human mobility (Mertz et al. 2011). However, despite the increase in literature, it remains unclear under which conditions environmental changes translate into mobility and which effects these changes will have on migration in the future in the West African Sahel and in general (Laczko, Aghazarm 2009a; Piguet et al. 2011b; Hummel et al. 2012). It is however, important to gain a better understanding of the linkages between environmental change and migration to be able to assess the consequences of environmental change for migration and to act or implement efficient measures precociously in order to avoid that natural hazards turn into disasters.

The dimensions of the environment-migration nexus

The environment-migration nexus includes three different perspectives: 1) environmental change as a cause of migration; 2) environmental degradation as a consequence of migration, and 3) environmental change and migration as challenges to human security and peace (Suhrke 1994; Kibreab 1994; Hugo 1996; IOM 2007; de Sherbinin et al. 2008; Adamo 2009; Laczko, Aghazarm 2009b; Hummel et al. 2012; Faist, Schade 2013). This thesis only elaborates on the first perspective on the impact of environmental changes - including climate change - on population mobility. Climate or environmental changes are assumed to have a major impact on population mobility and displacements (IPCC 2007a). These changes usually fall in two categories: *sudden-onset environmental events* or natural disasters - such as earthquakes, hurricanes, floods, droughts - and *slow-onset environmental changes*, such as deforestation, desertification, sea level rise, water scarcity, soil erosion and changes in precipitation and temperature (Leighton 2009; Naik 2009; McLeman, Hunter 2010).² Natural disaster and slow-onset environmental changes have different impacts on population mobility and are thus usually analysed separately. This

²Other authors include also: accidental disruptions or industrial accidents (e.g. chemical manufacture and transport or nuclear reactor accidents); development projects involving forced settlements (e.g. dams, large irrigation projects) and conflict and warfare (see Naik 2009).

study will focus on the impact of slow-onset environmental changes, such as changes in rainfall and land degradation, on migration in the West African Sahel. While in the case of sudden natural disasters the role of geophysical factors is immediately evident, the role is less clear and difficult to measure in the case of slow-onset environmental changes (Lonergan 1998; Adamo, de Sherbinin 2011; Hummel et al. 2012).

There has been an enormous increase of case studies and several research projects on the issue - particularly during the last decade. These studies have pushed the research on the environment-migration nexus forward and reached agreements on some important aspects. Today, it is commonly agreed that environmental change in the context of slow-onset environmental changes almost always interacts with other (cultural, demographic, economic, political and social) drivers of migration (Black 2001; Castles 2002, 2011; Kliot 2004; Piguet et al. 2011a; Hummel et al. 2012; Laczko, Piguet 2014). This multi-causality of migration, however, makes it difficult to prove a direct link between environmental factors and population mobility in most cases and challenges the definition and existence of “environmental migrants” (Lonergan 1998; Adamo, de Sherbinin 2011; Piguet et al. 2011b). In contrast to the negative view of earlier studies on migration as a failure to adapt to environmental change, today, migration is mostly considered in a more positive way as an adaptation strategy to (slow-onset) environmental changes to diversify the household’s income (Adamo 2003; McLeman, Smit 2006; Kniveton et al. 2008; Perch-Nielsen et al. 2008; Laczko, Aghazarm 2009b; Tacoli 2009a; Schmidt-Verkerk 2011; de Sherbinin et al. 2012).

The most recent fifth IPCC-report reflects this dominant view on migration in areas affected by climate change. The report states that - with high agreement but medium evidence - “mobility is a widely used strategy to maintain livelihoods in response to social and environmental changes” which prevents them from being forced to move later on (Adger et al. 2014: 758). At the same time, the focus of research has shifted from the migrants to those who are not able to use migration as a livelihood strategy as the most vulnerable people to environmental stress (Black, Collyer 2014; Black et al. 2011b; Adger et al. 2014). Moreover, the focus of research has shifted from the analysis of the direct impacts of environmental stressors on migration to the relationship between environmental and non-environmental variables and people’s vulnerability to environmental changes and thus on the intermediate mechanisms which can translate environmental stress into mobility (Morrissey 2012b). This shift in perspective has been initiated by several migration scholars who have argued that the impact of environmental change on migration is

not determined by environmental factors themselves but by a lack of the development that generates vulnerability to environmental change (Lonergan 1998; Black 2001; Castles 2002; Jónsson 2010). Today it seems agreed that non-environmental factors play a key role in determining people's vulnerability to environmental stress (Tacoli 2011c) and that people's vulnerability to environmental changes in turn is influenced by individual characteristics (i.e. age, gender, ethnicity, etc.) and by the household's assets (i.e. finances, social networks, etc.) (Laczko, Aghazarm 2009a; Naik 2009; Black et al. 2011a; Schmidt-Verkerk 2011).

Despite the progress in the environment-migration research, the effects of environmental or climate change on human mobility remain unclear because the results are often highly context-specific and difficult to generalize. It is still not clear under what conditions environmental changes translate into migration and to which extent climate and environmental change may exacerbate existing environmental and socio-economic problems and therewith influence migration in the future (Adamo 2008; Kniveton et al. 2008; Laczko, Aghazarm 2009a; Piguet et al. 2011a; Warner 2011).

1.2 The aim of the thesis and its contribution to the environment-migration research from a critical development perspective

The aim of the thesis

The aim of this thesis is to contribute to a better understanding of the impact of environmental factors on migration in the West African Sahel, using the example of two rural study areas, Bandiagara in Mali and Linguère in Senegal. To accomplish this goal, the thesis focuses on individual migration motives rather than on household needs to analyse what determines people's decision to stay or to migrate. Environmental factors include the environmental conditions in the area as well as (potential) climatic and environmental changes. The thesis compares quantitative and qualitative data from the two rural study areas which - at first sight - have similar climatic conditions and migration patterns. This seems to be suitable to identify local specifications and generalizable results at least for the West African Sahel. The study challenges the view on migration as a household adaptation strategy in response to environmental changes by arguing that migration in areas affected by environmental stress is not only driven by external forces and unfavourable living conditions but also depends on people's capabilities to choose between migrating and staying as well as by individual preferences and aspirations.

The research of this thesis is guided by a set of research questions. A first set of research questions aims at analysing the livelihood situation and people's (potential) vulnerability to environmental stress in the two study areas. It includes the following questions:

- How dependent are people on the natural environment? What are the main livelihood stressors? What are available livelihood strategies in order to cope with environmental stress?

A second set of questions aims at describing the migration situation in the two study areas:

- Who migrates? What temporal and spatial forms of migration are taking place? Who makes the migration decision? What are the reasons and motivations to stay and to migrate?

While the first two sets of questions aim at describing the livelihood and migration situation, the third set of research questions relates to analytical questions on the linkages between environmental change and migration in the study areas, including the social-ecological conditions³ of migration and individual agency:

- How do environmental factors, social aspects and individual motives influence the migration decision? Why do some people migrate and others stay in areas affected by environmental change? How do social inequalities shape the motives and capability to migrate or to stay? Whose migration is (the most) affected by environmental change?

The approach of this thesis differs in many conceptual and methodological aspects from most existing studies on the environment-migration nexus, which it criticises as falling short of understanding migration in areas affected by environmental stress for the following reasons:

First, it analyses the reasons and motives of migration in a general way to identify the relative weight of environmental factors in people's migration decision. This distinguishes it from most previous studies which focus on the environmental stressors to analyse their (direct) impact on migration.

Secondly, it focuses on the individual - and not the household - as the main unit of analysis. It therefore places the individual's reasons and motives to migrate and to stay in the centre of the analysis and acknowledges unequal power relations within a household or community. Its focus on the individual challenges the predominant view on migration as

³ In the present thesis, the term "social" embraces cultural, economic, social and development aspects.

a household adaptation strategy to unfavourable environmental conditions. It argues that as a consequence of this assumption, most studies do not sufficiently acknowledge that the reasons and motives of migration are manifold. Although the multi-causality of migration is agreed upon, most studies focus on the unfavourable structural drivers of migration, while neglecting that migration might be related to better opportunities elsewhere or individual migration motives, such as curiosity or achieving a greater autonomy.

Thirdly, this thesis considers people's capabilities to stay or to migrate, which includes that it not only analyses people's reasons to migrate but also their reasons to stay, which have been neglected in most previous studies. It argues that most studies presume the existence of a household's need to migrate without differentiating whether people need or want to migrate. Even if there is a household's need to migrate, different household members might have different motives to do so. It argues that particularly young people often want to migrate and that the decision to migrate or not is often an individual - not a household - decision. This thesis argues that it is crucial to consider people's capability to make a free decision on migrating or staying as well as their aspirations and preferences in order to understand why some people migrate from an area affected by environmental changes while others do not.

Last but not least, this study considers broader social transformation processes and their influence on environmental impact factors on migration. It argues that the focus of most studies on livelihood stressors or the local environmental and non-environmental drivers to explain migration is insufficient because it does not consider that processes, such as an increasing reluctance of young people to work in agriculture or an increasing desire of young women to migrate, might compensate the negative effects of environmental factors on migration.

The findings of this thesis are based on a long-term field experience and - qualitative and quantitative - empirical evidence from Mali and Senegal. They constitute the basis for the new conceptual approach developed in this thesis to analyse the environment-migration nexus - which the author calls "The Capability and Aspirations Approach". The new approach acknowledges the multi-causality of migration - with environmental factors as one of the causes -, people's capabilities to choose between migrating and staying as well as the individual motives, preferences and aspirations to migrate or not and embeds them in broader social transformation processes.

A critical development perspective to explain the environment-migration nexus

This thesis is assigned to the field of development sociology and combines a development approach with a social-ecological perspective to guide its research on the environment-migration nexus.⁴ It has been part of the research project *micle*⁵ which aimed at providing new scientific insights into the complex relationships between climate-related environmental changes and population movements by analysing the social-ecological conditions of migration in two rural study areas in Mali and Senegal. Thus, the social-ecological research perspective as well as the regional focus on the West African Sahel and the two rural study areas have been predetermined by the research project.

The environment-migration research itself has not been classified to a scientific discipline; initially analysed by natural scientists and human geographers, it became increasingly popular among social scientists and migration scholars in particular. The lack of affiliation to a discipline is a potential reason for the fact that most case studies on the environment-migration nexus lack a theoretical foundation and that results are hardly linked to current theories and concepts (Kliot 2004; Doevenspeck 2011). Taking up the argument that the impact of environmental change on migration is determined by a lack of the development that generates vulnerability to environmental change, this thesis adjusts development frameworks for its purpose. It uses a theoretical framework that combines a conceptual framework for the drivers of migration from the environment-migration research (Black et al. 2011a) and two development frameworks: the Sustainable Livelihood Approach (SLA) and the Capability Approach (CA). Both the SLA and the CA have been occasionally mentioned in a few studies (UNDP 2009; Schmidt-Verkerk 2011; Schade 2013), but have hardly been applied to any empirical studies on the environment-migration nexus. Inspired by Sen's Capability Approach, this thesis will analyse how development entitles people to choose freely between migrating and staying and to be able to produce or purchase sufficient food and in how far environmental stress may deprive people from these entitlements.

⁴ In the author's opinion, the linkage between migration and environmental changes can be analysed at least in two ways: 1) to conceptualise environmental-migration research with current migration theory and to explain environmentally induced migration as one type of migration, and 2) to explain migration as a consequence of development issues which triggers vulnerability and migration in its consequence. This thesis will pursue the latter way.

⁵ The project "micle - Climate change, environmental changes and migration: social-ecological conditions of population movements in the Sahelian countries Mali and Senegal" has been funded by the German Federal Ministry of Education and Research (BMBF) within the "Social-ecological research" funding programme (SOEF) from the year 2010 until 2014. For more information on the micle-project see www.micle-project.net.

The special feature of this thesis is that it combines its focus on development with a social-ecological perspective to analyse the environment-migration nexus. The work is inspired by approaches that analyse the linkages between individuals, society and the environment, such as human ecology, social ecology⁶ and the population and environment research (cf. Hummel 2008; Hummel et al. 2013). These approaches have in common that they presume that natural and social processes as well as human agency are highly intertwined and dependent on each other (Becker, Jahn 2006; Hummel et al. 2011). Particularly, the social ecology approach refers to a critical perspective of the relationship between society and nature and aims at identifying crisis-laden environmental developments and its impacts on society - or the reverse - as well as at providing sustainable solutions (Becker, Jahn 2006). Recently, some scholars have taken reference to the concept of coupled social-ecological systems (SES) to analyse the environment-migration nexus. These studies describe migration in areas affected by environmental change as a consequence of an imbalance between human and environment systems (Kliot 2004; Oliver-Smith 2010; Renaud et al. 2011). These attempts to apply systemic approaches have turned out not to be very helpful to advance the knowledge on the complex linkages between migration and environmental changes. While the systemic approaches ignore the individual perspective, this thesis will focus on the linkages of the individual, society and environment to analyse the environment-migration nexus. The study considers the structural, social-ecological conditions and human agency in the migration decision and at the same time places the decision in a broader context of social development and transformation in developing countries. The social-ecological conditions imply a broader understanding of the term “social”, which includes cultural, demographic, economic and political aspects, and which is highly intertwined with environmental factors and thus cannot be examined separately. This doctoral thesis in development sociology contributes with its findings to the environment-migration research in a narrow sense, and to social-ecology research, the population and environment research, and the migration and development research in a broader sense.

⁶Social-ecological research has been developed as a field of research within the last 25 years. It has been successfully applied by the ISOE – Institute for Social-Ecological Research in Frankfurt/ Germany since 1989 and by other institutes and programmes (e.g. Ecolog-Institute for social-ecological research and education, the Wuppertal Institute for Climate, Environment and Energy; the Öko-Institut for Applied Ecology and the Institute for Social Ecology in Austria, as well as by the grant programme of the German Federal Ministry for Education and Research, "Forschung für nachhaltige Entwicklungen" (FONA) [Research for sustainable Development]). Mainly applied in German-speaking countries, social-ecological research has major similarities with the research field of “human ecology” which is more common in anglophone countries.

Thesis outline

Chapter 2 starts with an introduction into the history on the research on the environment-migration nexus which has been heavily influenced by the controversy on the concept of the “environmental refugees”. The historical outline is crucial for a better understanding of the current research on the environment-migration nexus.

Chapter 3 provides a theoretical framework for the data analysis that guides the following research. The framework is based on current conceptual approaches on the environment-migration nexus and two development frameworks, the Sustainable Livelihoods Approach and Amartya Sen’s Capability Approach.

Chapter 4 describes the climatic and environmental stressors identified for the West African Sahel as well as the migration patterns in the regions. Moreover, it describes the setting of the two study areas: Bandiagara in Mali and Linguère in Senegal and basic facts relevant for this thesis. Subsequently, chapter 5 explains the methods used for this thesis, focusing on the fieldwork, the qualitative and quantitative data collection and data analysis, its challenges, limitations and advantages.

Chapter 6 analyses and discusses the livelihood situation in the two study areas by considering the livelihood conditions, livelihood stressors and people’s strategies to ensure and improve their livelihoods. Moreover, it analyses the migration situation in the two study areas. It describes and discusses who migrates, the migration patterns, the migration decision and people’s motives to stay or to migrate by considering the impact of individual characteristics, such as age, gender and the level of education, as well as people’s susceptibility to environmental stress.

The following chapter 7 discusses environmental factors, socio-economic factors and individual aspects as the main drivers of migration in more detail. It focuses on the interdependence of the structural, social-ecological conditions of migration and individual aspirations that determine people’s migration decision.

The last chapter 8 concludes by applying the theoretical framework to the results and providing a new conceptual approach – “the Capability and Aspirations Approach”. It argues to distinguish the migrants and non-migrants by their capabilities to migrate or to stay and to consider individual motives and aspirations on a micro-level as well as social transformation processes on a macro-level in the research on the linkages between environment change and migration.

2 Climate change, environment and migration - Unclear linkages

2.1 The political debate and the academic controversy on the linkages of climate and environmental changes and migration

The introduction of the concept of “environmental refugees” and their predicted numbers in the future as determinants of the political debate

The linkages between climate change, environment and population mobility have been of interest in academia, media, politics and the public for nearly three decades. The term “environmental refugee” was formulated by El-Hinnawi in his publication for the United Nations Environment Programme (UNEP), which aimed to direct public attention to the human impact of environmental changes (El-Hinnawi 1985).⁷ El-Hinnawi defines environmental refugees as “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”⁸ (El-Hinnawi 1985: 4). This definition constituted an important basis for the operationalisation of the concept for subsequent studies on this topic (Morrissey 2012b). A few years later, Jacobsen (1988) predicted the number of environmental refugees to be 10 million (according to El-Hinnawi’s definition) based on her studies in the African Sahel, which altered the concept of environmental refugees from a hypothetical to a quantitative one (Morrissey 2012b).

At this time, climate change entered the public debate with the First Assessment Report of the IPCC (1990a). The IPCC noted that “the gravest effects of climate change may be those on human migration as millions are uprooted by shoreline erosion, coastal flooding and agricultural disruption” (IPCC 1990b cited in Myers 1993: 752). This statement strengthened the concerns of the international community about the impact of climate change on human mobility (Morrissey 2012b; Piguët et al. 2011b). Some authors argued

⁷ The origin of the issue and term is controversial. While Saunders (2000 cited in Morrissey 2012: 36) argues that the conceptual roots of the ‘environmental refugee’ reach back (at least) to the 1930s, Gemenne (2011a) notes, that the issue was first mentioned by Vogt in 1948 in „Road to Survival“. For the term ‘environmental refugee’ Kibreab (1997) argues that it was first used in 1984 in a briefing document from the International Institute for Environment and Development, while Black (2001) points out that the term was already introduced in the 1970s by Lester Brown from the Worldwatch Institute. However, it seems to be generally accepted that the term was brought into the public debate by El-Hinnawi in 1985 (Morrissey 2012b; Castles 2011).

⁸ El-Hinnawi defines ‘environmental disruption’ as “any physical, chemical, and/ or biological changes in the ecosystem (or resource base) that render it, temporarily or permanently, unsuitable to support human life” (El-Hinnawi 1985: 4).

that the investigation of environmental migration drivers was overshadowed by the focus on climate change impacts (Gemenne 2011b). Hence, Myers (1993) scaled up Jacobsen's predictions to an estimated number of 25 million environmental refugees at that time. Two years later, Myers and Kent (1995) stated that "environmental refugees could become one of the foremost human crises of our times" (Myers, Kent 1995: 20) and predicted that the number of environmental refugees might double to 50 million by the year 2010 and that global warming might put at least 200 million people at risk of displacement by 2050 through sea level rise, floods and droughts (Myers, Kent 1995: 1; 149).

The high numbers of potential environmental refugees and the alarmist rhetoric concerning climate change and its impact on humanity expressed by various actors, including UN agencies, NGOs, national governments and popular media, sparked political debate and interest in the topic. However, it also provoked fear among policy makers and resulted in anti-immigration and racist perspectives (Homer-Dixon 1991; WBGU 2007; Hartmann 2010). The scenario even found its way into popular culture, exemplified in the fictional film, "The March" that demonstrates a starving population marching from the Sahel towards Europe as a consequence of global warming.⁹ A growing body of literature on climate change, environment and migration emerged in the 1990s, concerning population growth and often influenced by neo-Malthusian perspectives (McGregor 1994; Morrissey 2012b; Piguet et al. 2011b; Hummel et al. 2012). These studies assumed that population growth would lead to scarcity or depletion of natural resources and consequently result in migration and conflict (Homer-Dixon 1991; Bilsborrow 1992; Westing 1992; Myers 1993; Döös 1997).

Myers' and Kent's predicted numbers of environmental refugees have been utilised in academia, media and politics and often were treated as empirical evidence (Gemenne 2011b). Even years later, the figures still remained popular and continued to be recited, particularly by advocates of action on global warming, e.g. in the respectable Stern review on the economics of climate change (Stern 2007). Some reports even argued for a potential mass migration as a result of climate change and increased the number of people affected by climate change to up to 1 billion by 2050 (Christian Aid 2007; Jakobeit, Methmann 2007, Brown 2008a, 2008b). The numbers of displaced people recorded in these reports differ considerably due to differing concepts and methods applied (Adamo 2008;

⁹The March is a fictional film by the British director David Wheatly and the writer William Nicholson produced within the One World campaign in 1990.

Piguet 2010; Foresight 2011).¹⁰ However, almost all estimates are in one way or another based on early predictions (Foresight 2011).

The academic controversy on the concept of environmental refugee and the linkages between climate change, environment and migration

The political and public debate on the effects of climate change on human mobility had been heavily shaped by the concept of the environmental refugees and the alarmist rhetoric around it. Despite political and societal acceptance of the concept of environmental refugee, it has been highly criticized in academia. Academic discourse on the linkages between climate change, environment and migration was marked by a disciplinary divide between natural scientists and social scientists (Oliver-Smith 2010; Castles 2011; Gemenne 2011a; Piguet et al. 2011b). The supporters of the two points of view have also been labelled as “maximalists and minimalists” (Suhrke 1994), “alarmists and sceptics” (Gemenne 2011a), “proponents and critics” of the term environmental refugees (Morrissey 2012b) and as “environmentalists and migration scholars” (Castles 2011), respectively. While the “environmentalists” supported the concept of environmental refugees in order to direct public attention to negative human impacts of environmental changes, the “migration scholars” criticized and challenged the concept (McGregor 1994; Suhrke 1994; Kibreab 1997; Lonergan 1998; Black 2001). Three topics of controversy arose: conceptual, methodological, and terminological. The three controversies are strongly interconnected and related to one another.

The conceptual controversy is based on the critique of social scientists - mainly migration scholars - on the assumptions of causality between environmental change and migration. The “environmentalists” consider environmental degradation and global warming as a direct cause of (potential) large-scale population displacements (Suhrke 1994; Castles 2011). The assumption of a mono-causal link between the environment and population displacement for instance has been uncritically promoted by the early studies on environmental refugees (McGregor 1994; Lonergan 1998).

In contrast, “migration scholars” have argued that migration is multi-causal and that environmental factors influence migration in combination with other cultural, economic, political, and social factors (Castles 2002; Klot 2004; Hugo 2008; Kniveton et al. 2008;

¹⁰ For a more detailed overview on the different numbers published on potential ‘environmental refugees’ and environmentally displaced people (see Adamo 2008; Foresight 2011; Hummel et al. 2012).

Laczko, Aghazarm 2009b; Martin 2009; Warner et al. 2009). The multi-causality of migration implies that a migration decision cannot be explained by a simple direct link between environmental change and migration (Suhrke 1994). While these scholars usually do not deny that environmental changes can be a cause of population mobility, they argue that in most cases it is not the predominant cause of migration (Black 2001). Therefore they argue that both terms, “refugee” and “environmental”, are invalid (Lonergan 1998; Black 2001). Most critics reject the term “environmental refugee” because they believe that it is unfeasible to separate environmental causes of migration from others and that a direct link between environmental factors and population mobility is difficult to prove empirically in most cases (Kritz et al. 1992; Black 2001; Piguet et al. 2011b).

This leads to the controversy topic of the methods applied to understand the linkages between environmental changes and migration and to generate estimated numbers of actual and future environmental refugees. These numbers were estimated according to the number of people - and their respective resource use - living in areas identified to be prone to global warming. The use of this method has been criticised by migration scholars who argue that being at risk does not necessarily result in displacement or migration, but that coping strategies and adaptive practices have to be considered (Black 2001; Castles 2002, 2011; Adamo 2008; Piguet 2008). Moreover, they argue that existing studies on the environment-migration nexus show no convincing evidence that environmental degradation actually leads to migration (Black 2001). As a consequence, it is criticized that these predictions on the number of environmental refugees are highly speculative and “little more than educated guesswork” in most cases (Lonergan 1998: 8). Instead of repeating these figures, they call for an inductive micro-level research to investigate the dynamic causes and consequences of migration - including adaptation, prevention and coping strategies - for each case in the local context (Lonergan 1998; Black 2001; Adamo 2008). In addition, critics argued that it is impossible to correctly categorize environmental refugees or to make reliable predictions, since definitions varying among studies (Lonergan 1998; Black 2001; Adamo 2008).

Terminological controversy is the dispute over the term “environmental refugee” and whether or not people affected by climate and/or environmental change should be defined as such. Additionally, there are legal and political implications linked to the term (Brown 2008a). Environmentalists claim that the term “refugee” expresses the seriousness of the situation, while an alternative word such as “migrant” would imply a voluntary move

rather than a forced displacement (McGregor 1994; Brown 2008a; Burson 2010). In contrast, most migration scholars and refugee specialists have rejected the term “environmental refugee” due to its potential to undermine the legal definition of the term refugee, which refers only to people who have crossed international borders to seek protection from political persecution (Brown 2008a; Laczko, Aghazarm 2009b; Afifi, Jäger 2010; Hummel et al. 2012; Morrissey 2012a) The majority of people affected by climate and environmental change, however, move within a country (Black 2001; Laczko, Aghazarm 2009b). Critics argue that the term “environmental” is redundant if a person satisfies the criteria for being labelled a “refugee” (Black 2001; Castles 2011).¹¹ Political implications of the term and the predicted high number of environmental refugees have raised concerns that they may threaten national and international security in the global “North” and thus stigmatism associated with the word “refugee” has developed (McGregor 1994; Kibreab 1997; Castles 2011). Some scholars even argued that the term “environmental refugee” had been invented to depoliticise the causes of displacement, enabling states to derogate their obligation to provide asylum or even to enforce more rigid immigration controls and policies (Kibreab 1997; Hartmann 2010; Gemenne 2011a).

Critical research of the term “environmental refugees” started dominating the view on the linkages between environmental change and migration in academia in the early 2000s. However, a growing body of “grey” literature by governments, international agencies, non-governmental organisations, the media, and civil society still represented the alarmist perspective and propagated predictions of a high number of people displaced by climate change (Gemenne 2011a). The present thesis is inspired by the critic’s perspective which has mainly shaped the development of the environment-migration research during the last two decades.

¹¹ The dispute about the use of the term ‘environmental refugee’ has heated a debate amongst international human rights lawyers. The term has further implications, such as the right to return, the need for protection from the state, etc., which will not be portrayed because it would go beyond the scope of the topic of this study. For further reading see e.g. Burson (2010), McAdam (2010), Gemenne (2011a).

2.2 Development of the environment-migration research: the discovery of human agency

Increase in literature on the environment-migration nexus

Differential perspectives of the term environmental refugee led to fundamental research on the linkages between environmental change and migration which in turn influenced the political debate and public opinion on the environment-migration nexus.

In the mid-2000s, the number of funded research projects, studies, and publications on the environment-migration nexus increased significantly. Research projects during this time period include the EU-funded project “EACH-FOR”¹² (2007-2009), its follow-up project “Where the rain falls”¹³ (2011-2013) funded by Care, Axa and the MacArthur foundation, the “Foresight”-project¹⁴ (2009-2011) funded by the UK-government, and the “micle-project”¹⁵ (2010-2014) funded by the German Federal Ministry of Education and Research, of which this study is a part.

The number of research studies and publications increased more than tenfold during the first decade of the millennium (see Figure 1). The studies cover regions all over the world, including developed and developing countries, and focus on various environmental phenomena. According to Laczko and Piguet (2014) most publications are geographically focused on the Americas (96), followed by Africa (87) and the Asia-Pacific region (74), while studies on Europe (18) and the Middle East (6) are underrepresented (Laczko, Piguet 2014: 5). However, the high number of publications does not necessarily imply that more empirical data is available for these regions because many reports draw upon the findings of the same studies (Laczko, Piguet 2014). On the contrary, scholars argue that the number of empirical case studies is still “surprisingly small” compared to the volume of recent academic and policy publications on climate change and migration (Black et al. 2011c: 432) and that “studies are still at an early stage and a great deal remains to be done” (Castles 2011: 421).

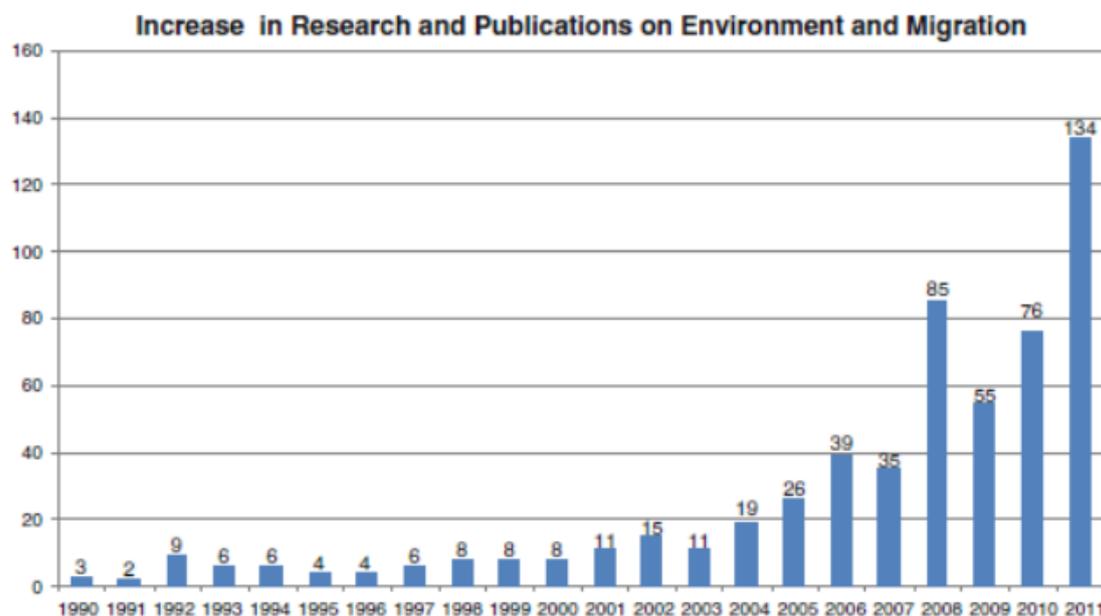
¹² For more information see: <http://www.each-for.eu>.

¹³ For more information see: <http://wheretherainfalls.org>.

¹⁴ For more information see: <https://www.gov.uk/government/collections/migration-and-global-environmental-change>.

¹⁵ For more information see: <http://www.micle-project.net>.

Figure 1: Increase in the number of publications on migration and the environment, 1990-2011.



Source: IOM/University of Neuchâtel in Laczko, Piguet 2014: 5.

The shift from a passive to a proactive view on migrants in the context of environmental changes

Further environment-migration research resulted in an important shift towards a more positive and proactive understanding of the people and mobility in the context of environmental change.

As a consequence of the aforementioned controversy, there have been various attempts to replace the term “environmental refugee”, in order to overcome the assumption that environmental or climate change migration is a forced movement (Suhrke 1994; Brown 2008a; Gemenne 2009; Hummel et al. 2012).¹⁶ Until today, there was no consensus on a common definition of an appropriate term or concept (Dun, Gemenne 2008). Nevertheless, the International Organization for Migration (IOM) offers a compromising and often cited working definition of the less controversial term “environmental migrant” as an alternative for the term “environmental refugee”.

¹⁶ For example, Suhrke (1994) suggested to replace the term “environmental refugee” by “displaced person”, to avoid confusion of its legal implications, but to obtain the forced character of the movement. Laczko/Aghazarm (2009b) recommended to concretise the term to “internally displaced persons”, referring to the fact that most environmentally induced displacements will occur within a country and Wood (2001) proposed the term “ecomigrant”, just to give a few examples (for more detailed information see e.g. Morinière (2009) and Hummel et al. (2012).

“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).

Studies which explicitly refer to the effects of climate change on migration have substituted the term “environmental migrants” by “climate migrants” (see e.g. Meze-Hausken 2000; Brown 2008a; Kniveton et al. 2008; Schmidt-Verkerk 2011). However, this study considers climate change as one aspect of environmental changes.

Moreover, there was a general shift in the research on the environment-migration nexus in which the perspective of migration changed from a passive towards a more positive and a proactive view on mobility (Lonergan 1998; Black 2001). Initial studies on environmental refugees did not distinguish between forced and voluntary movement because mobility was assumed to be forced. The critics of the term, however, have pointed to the voluntary aspect of human mobility by highlighting the multi-causality of migration. Replacing the term “environmental refugee” by the term “environmental migrant” acknowledged the (potential) voluntary characteristic of migration. The IOM defines “environmental migrants” as those who voluntarily and forcibly move in response to environmental changes. Today there is wide scientific agreement that population movements caused by climate or environmental change range from voluntary to forced and that most migrations contain elements of both (Richmond 1993; Davies 1996; Hugo 1996; Carling 2002; Brettell, Hollifield 2008; Hummel et al. 2012; Morrissey 2012a).

In environment-migration research, the terms “refugees” and “passive victims” changed to “migrants” and “agents”. With the changing view that people are agents, which make conscious decisions, migration started to be increasingly seen in a positive light as a coping and/or an adaptation strategy in response to climate stress and environmental changes instead of as a “failure to adapt” to environmental changes (Black 2006; Black et al. 2011c; McLeman, Smit 2006; Heine, Petersen 2008; Laczko, Aghazarm 2009b; Tacoli 2009b; Barnett, Webber 2009, 2010; Ober 2014). This led to the current view on migration as a solution to environmental stress rather than a problem (Black 2001; Gonin, Lassailly-Jacob 2002). With this new perspective on migration, the academic community commonly acknowledges the complexity and multi-causality of migration and at the same time rejects the idea of a direct link between environmental changes and migration. Today, there is consensus that environmental factors *can* play a role in migration (and might

become more important due to climate change), but that migration decisions are also generally influenced by other cultural, economic, political and social aspects (Castles 2011; Hugo 1996; Hummel et al. 2012).

With consensus on the multi-causality of migration and increasing number of empirical work, the main concern in environment-migration research shifted from the central question of “whether or not environmental change can cause (or worse, force) human migration” (Morrissey 2012b: 39) to the questions on when and under which conditions environmental stress translates into mobility (Tacoli 2009b; Morrissey 2012b). People’s vulnerability to climate changes and other environmental stressors was argued to be the crucial link between the environment and migration decision. Piguet et al. (2011a) note in their study on ‘Migration and Climate Change’ that “understanding the role of the environment in migration dynamics implies analysing how and why people are vulnerable to climate change, as well as examining the different strategies they develop to cope with (or adapt to) environmental stress - migration being one among other such strategies” (Piguet et al. 2011b: 2).

During recent years, an increasing number of research studies have highlighted people’s vulnerability as a crucial component of migration in areas prone to environmental hazards (Cutter 1996; Cutter et al. 2003; Kelly, Adger 2000; Adger 2006; Bohle 2007; Oliver-Smith, Shen 2009; McLeman, Hunter 2010). Today, migration - both internal and international - in the context of environmental changes is mainly considered an adaptation strategy to diversify people’s income sources and thus reduce vulnerability to external environmental and non-environmental stress (McLeman, Smit 2006; McLeman, Hunter 2010; Tacoli 2009b; Black et al. 2011b; Mertz et al. 2011; Hummel et al. 2012; Rademacher-Schulz, Salifu Mahama 2012; Adger, Adams 2013; Ober 2014). Remittances and accumulated assets obtained from migration increase the household’s ability to cope with (future) environmental changes and shocks (Tacoli 2009b; Scheffran et al. 2012; Ober 2014). However, migration is usually only one strategy among a variety used to cope and adapt to environmental changes, such as selling assets, wage labour, eating bush foods, crop intensification, etc. (Meze-Hausken 2000; Scott et al. 2001; Tacoli 2009a). Different local strategies may reduce the need to migrate and vulnerability to environmental changes and thus migration may not necessarily occur (Meze-Hausken 2000).

The shift to the view of migration as an adaptation strategy and the solution to environmental stress also changed the perception on the most vulnerable people with respect to environmental changes. While early studies considered all migrants from an area prone

to environmental changes as “victims” of environmental change, today several studies identify the most vulnerable as “trapped populations”, who lack the ability to move (Black et al. 2011b; Foresight 2011; Adger, Adams 2013). Climate change and environmental degradation are assumed to particularly affect the poorest people, since they are the most vulnerable, least able to adapt, and least capable of using migration as an adaptation strategy in response to environmental stress (IPCC 2007a; Leighton 2011; Piguet et al. 2011a; Black et al. 2013).

The continuous advancement of environment-migration research in academics also had ripple effects on the political debate on climate change and the impact of human mobility. The First Assessment Report of the IPCC (1990a) claims that human migration is the gravest effect of climate change (IPCC 1990b in Myers 1993: 752). The second and third IPCC report places no emphasis on migration but states that “climate change (...) may generally accelerate rural-to-urban migration” (IPCC 1995: 37) and that migration “may be the last of a complex set of coping strategies (Meze-Hausken, 2000)” (Scott et al. 2001: 397). The Fourth IPCC Assessment Report (2007a) acknowledges the complexity of a migration decision and its multiple motivations (IPCC 2007a). In addition, it recognises that migration is often a longstanding response to seasonal variability in environmental conditions and a strategy to accumulate wealth and to reduce poverty (Wilbanks et al. 2007). The fifth and most current IPCC-report (2014) emphasises the role of migration as an adaptation strategy to maintain livelihoods in response to social and environmental changes in all regions of the world that experience climate variability and as a way to escape negative climate change impacts (Adger et al. 2014).

International organisations have gradually stopped publishing alarmist predictions of the number of “environmental refugees”. For instance, UNEP deleted this information from their website (Bojanowski, 17.04.2011). Instead, some National Adaptation Programmes for Action (NAPAs)¹⁷, e.g. Mali’s NAPA, now consider migration as a traditional and/or positive adaptation strategy (UNFCCC 2014). However, most NAPAs still consider migration or displacement as a negative effect of climate change (Martin 2009; Schmidt-Verkerk 2011).

¹⁷ NAPA’s provide a processes for Least Developed Countries (LDCs) to identify priority activities to respond to the consequences of climate change (UNFCCC 2014).

2.3 The unclear and unsatisfying findings on the environment-migration nexus

Difficulties and agreements on the linkages between environmental changes and migration: Why the link remains unclear despite the high number of publications

Despite the increasing number of publications and case studies, linkages between environmental change and migration remain unclear because migration motives and patterns differ considerably between the case studies. Even case studies that focus on the same (wider) region vary in focus, methods, concepts, and theories (if any) and are therefore difficult to compare (Jónsson 2010; Schmidt-Verkerk 2011). General difficulties for comparing case studies are:

- there is no commonly agreed definition of “environmental migrants”
- relevant terms, such as “migration” and “climate change” or “environmental change” are not defined or studies refer to different aspects, such as different changes in the environment (e.g. land degradation, changes in rainfall, temperature or vegetation) or different migrations (e.g. only first migration, migration intention, life history of migrations);
- the context is very different - particularly if considering case studies from all over the world;
- studies are conducted on different scales, ranging from a village to several countries;
- methods applied differ considerably.

Against the backdrop of these difficulties it seems not surprising that concrete conclusions on the environment-migration nexus are rare and that the linkages still remain unclear. However, despite all these conceptual and methodical difficulties, the research community has at least widely agreed on the following conclusions on the environment-migration nexus (e.g. Schmidt-Verkerk 2011; Bremner, Hunter 2014; Laczko, Piguet 2014; Schmidt-Verkerk 2011):

- Migration is complex and multi-causal. In most cases it depends on many other factors besides the environment.
- The local context is crucial because it influences the causes of migration and alternative local strategies available to cope with environmental stress.
- People usually can choose between a variety of strategies, migration being one, to cope with environmental stress which implies that environmental change does not necessarily lead to migration.

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- Most migrations from areas affected by environmental change are considered a preventative and voluntary livelihood or adaptation strategy.
 - Migrations from areas affected by environmental change are mostly short-distance and short-term moves.
 - There seems to be an increasing agreement that people who are not able to migrate are the most vulnerable to environmental changes.
 - Individual characteristics, such as age, gender, marital status and education, can have a considerable effect on vulnerability and the decision to migrate.
 - The predictions of a high number of displaced people have been oversimplified and are unlikely to become reality.

Although these agreements are quite vague, it seems surprising that research could even come to these general agreements considering the variety of methods, concepts and scales used to study the environment-migration nexus.

The variety of methods, concepts and scales used in empirical case studies on the environment-migration nexus in African drylands

Case studies focussing on the environment-migration nexus in African drylands utilize a combination of qualitative methods, quantitative approaches, and future scenarios to analyse the linkages between environmental change and migration. Qualitative research methods include individual interviews (Carr 2005; Doevenspeck 2011), life histories, livelihood assessments (Morrissey 2012a), focus groups (Cissé et al. 2010), expert interviews (Afifi 2011; Bleibaum 2009) as well as participatory research approaches (Meze-Hausken 2000; Rademacher-Schulz, Salifu Mahama 2012). The methods used in the quantitative studies include primary data collection from mostly local areas (van der Geest 2009; Doevenspeck 2011; Hummel et al. 2012; Abu et al. 2014), secondary data analysis of national or community surveys (Findley 1994; Ezra, Kiros 2001; Henry et al. 2004; van der Geest et al. 2010; Black et al. 2011c) on an individual, household or community level, the combination of several data sets or panel data (Gray, Mueller 2012). The number of people included in the quantitative survey analyses varies from 100 to over several thousands.

Spatial scales of studies range from the local (Findley 1994) to national (Henry et al. 2004; Cissé et al. 2010) to regional level, in which several countries in one geographical region are investigated (Mertz et al. 2011). Those studies that apply future scenarios use methods, such as agent-based models (Kniveton et al. 2011; Warner et al. 2012b) or

Bayesian Belief Networks (Hummel et al. 2012; ISOE 2014), which usually include natural scientific data on changing weather conditions and data on human mobility. Many studies combine qualitative with quantitative methods (Afifi 2009; Cissé et al. 2010; Doevenspeck 2011; Rademacher-Schulz et al. 2012) and future scenarios (Hummel et al. 2012; Rademacher-Schulz, Salifu Mahama 2012; Warner et al. 2012b).

In addition to differential spatial scales, various types of people are interviewed in these studies. Interviews and questionnaires are addressed to migrants, people living in one area - including migrants and non-migrants -, or household heads (Doevenspeck 2005; Ezra, Kiros 2001; Rademacher-Schulz, Salifu Mahama 2012) in order to understand reasons for their own migration or the migration of other household members. Some studies inquire migration intentions (Abu et al. 2014), while others analyse the first out-migration (Henry et al. 2004) or include a migration history (Gray, Mueller 2012). The age of the interviewed and surveyed people also differs considerably; while Ezra and Kiros (2001) only included 10 to 29-years olds in their analysis, Gray and Mueller (2012) included people from the age of 15 upwards in their analysis, while most studies interviewed people from the age of 18 upwards.

Moreover, people of various ethnic backgrounds and economic status are studied, such as agriculturists and pastoralists, which differ in migration purposes and patterns. Traditional nomads are often highly mobile in search of grazing for their cattle, while other ethnicities are traditionally sedentary farmers that tend to engage in urban labour migration. The non-distinction between different ethnicities and their culturally shaped mobility patterns might have a distortive effect on the results. In addition, the definition and measurement of climate and environmental factors that might influence human mobility differ considerably by focussing either on changes in temperature (Dillon et al. 2011), rainfall (Henry et al. 2004; Gray, Mueller 2012), vegetation (van der Geest et al. 2010; Brandt et al. 2013), a combination of several data sets (Brandt et al. 2014a) and even future climate change scenarios (Kniveton et al. 2011). Furthermore, the time spent in the field ranges from a few weeks (Afifi 2009) to more than a year spread over several years (Carr 2005; Doevenspeck 2005). Field-experience is considered crucial for data reliability purposes (Jónsson 2010).

Each method used in case studies has its strengths and limitations. However, the variety of methods applied with no standardisation makes it extremely difficult and possibly unfeasible to compare results.

The importance of non-environmental migration drivers in African drylands

One-third of the existing research studies and publications on environment and migration focusses on Africa (Laczko, Piguet 2014). The African Sahel region is a prominent example for case studies on migration, drought and/or rainfall variability because people highly rely on agriculture and climate change has and will continue to affect livelihoods (Schmidt-Verkerk 2011; Ober 2014). There are two case study reviews that focus on African drylands - e.g. Morrissey 2014; Jónsson 2010 - which provide a good overview on the most relevant case studies on the environment-migration nexus in the region. However, they include nomadic transhumance, whose mobility motives and patterns and thus environmental drivers differ considerably from those of “sedentary” people. Both, Jónsson and Morrissey, conclude that linkages between migration and the environment are highly context-dependent, i.e. the historical context shapes migration patterns and the availability of alternative livelihood strategies. Being highly context-dependent means that the findings differ considerably, especially if analysed according to different categories, such as gender or age. The present thesis therefore does not describe the differing findings of the link between environmental factors and migration at this point (but will consider them in the later discussion) because this has been done in case study overviews (see above). Instead, it focuses on various conclusions and general results of case studies on migration drivers, providing an entirely different picture.

Many case studies come to very vague conclusions, such as the “impacts are difficult to predict” (Meze-Hausken 2000: 401) or “environmental stress can play an important role in the migration decision, but the relationship is complex” (Morrissey 2012a: 142). Others, such as Mertz et al. (2011), focus on adaptation strategies and climate vulnerability in the Sudano-Sahelian region of West Africa and state that “it was not possible to establish direct links between migration and climate variability and change” (Mertz et al. 2011: 105) but assume that low rainfalls could increase rural-urban migration.

With respect to migration drivers, some studies highlight that no direct link between environmental factors and migration was found and that it is not environmental factors themselves which influence the migration decision but rather their consequences or related structural constraints, such as reduced productivity or food insecurity (Morrissey 2012a; Rademacher-Schulz, Salifu Mahama 2012). These consequences, however, might result from other factors than climatic or environmental change. In order to emphasize the multi-causality and complexity of the migration decision, some studies highlight linkages between social and environmental conditions which makes it difficult and nearly

unfeasible to come to clear statements of environmental impacts on the migration decision (Doevenspeck 2011; Tacoli 2011c; van der Geest 2011).

In particular, quantitative studies tend to find causality between droughts and migration patterns, while the people themselves, when asked, do not relate the cause of their migration to drought or environmental factors. This has been the case for some of the most frequently cited studies on the effects of severe drought in the Sahel in the 1980s on migration, e.g. in Findley's (1994) study on drought and migration in rural Mali, in Ezra and Kiros' (2001) study on rural out-migration in drought prone areas in Northern Ethiopia and in a national migration survey in Burkina Faso after the droughts of the 1970s (cited in Henry et al. 2004: 454). While the data shows effects of drought on migration patterns, very few people actually link their migration to "droughts" or "famines". While in Findley's study economic reasons have been identified as the main drivers of migration for men (Findley 1994: 546), a very low percentage of participants in Ezra and Kiros' study attributed economic motives to the migration decision and instead migrated primarily for marital purposes (both men and women) (Ezra, Kiros 2001: 758). This suggests that the patterns either have been influenced indirectly by environmental factors - as argued by the studies above - or that other confounding variables or effects have been at stake.

Moreover, Doevenspeck (2011) highlights in his case study on Benin that the main problems in the home areas are not necessarily the main migration determinants. In his case study three quarters of the problems were related to the environment, while only half of the migration motives were linked to this aspect (Doevenspeck 2011).

While most case studies highlight the complexity of influencing factors of migration and the indirect effects of environmental changes on mobility, others state explicitly that non-environmental factors, such as individual characteristics and other structural conditions, have a much bigger impact on migration.

Structural conditions, such as the availability or absence of income opportunities, access to land or the tradition of mobility and cultural transformations, have been identified as main determinants of a migration decision (Tacoli 2011c). Van der Geest (2009), for example, notes on his Ghana case study that migration depends on socio-economic determinants, such as the availability of income opportunities in sending and destination areas rather than environmental factors. At the same time, his longitudinal analysis shows that out-migration was lowest in the most severe time period of environmental stress from the late 1970s to the early 1980s (van der Geest 2009).

Other studies emphasize the importance of individual and household characteristics (Ezra, Kiros 2001; Henry et al. 2004; Gray 2011; Morrissey 2012a). A main conclusion in the case study of Henry et al. (2004) on the impact of rainfall and the first out-migration in Burkina Faso, one of the most cited case studies on the environment-migration nexus, is that environmental factors actually play no significant role in the migration decision, a fact that is cited much less frequently. According to Henry et al., the migration decision depends mainly on individual characteristics, such as educational level, type of economic activity or ethnic group to which the individual belongs (Henry et al. 2004: 454). Environmental factors, measured by rainfall variables, only affect people's first out-migration if distinguished by duration and destination (Henry et al. 2004). Similarly, Ezra and Kiros (2001) demonstrate that for Northern Ethiopia, individual and household characteristics, such as age and gender of the individual, relationship to the household head, education of the household head and housing quality, are migration determinants (Ezra, Kiros 2001: 763–764).

These examples show that the impact of environmental change on migration behaviour is difficult to analyse and the ability to make general assumptions is limited. This is not only due to the multiple factors that influence human mobility and the high importance of the context of migration in environment-migration research, but also because in many areas - and particularly in the Sahel - people have been mobile and have been living with highly variable climatic conditions for generations (Mortimore 1989; Rain 1999; Meze-Hausken 2000; Black 2001; Leighton 2011; Foresight 2011; Piguet et al. 2011a; Schmidt-Verkerk 2011; Hummel et al. 2012; Morrissey 2014). Thus, the establishment of migration in society makes it even more difficult to identify net effects of environmental changes (Black et al. 2011a). Thus, it is not surprising that the case study findings, cited above, suggest that while environmental factors have an impact on migration patterns, the migration decision is influenced by other structural and individual reasons.

These vague results and minimal agreement on the complexity and context-dependency of migration, however, are quite unsatisfying. They do not allow for generalizations or concrete predictions and do not contribute much to advance the knowledge on the impact of environmental change on migration or the migration motives of people living in areas affected by environmental change.

2.4 A critical view of current research on the environment-migration nexus and its implications for the present thesis

Migration as an adaptation strategy and vulnerability as the crucial link between environmental change and migration

Today, research on the environment migration nexus considers migration mostly as an adaptation strategy in response to environmental change. Considering the complexity and multi-causality of a migration decision - even in areas affected by environmental change - it might also be a response to socio-economic or local development struggles.

Adaptation in climate change literature can be defined as “adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities” (IPCC 2007a: 869). Although adaptation is rarely differentiated in the context of migration and environmental changes (exceptions are e.g. IPCC 2007a; Scheffran et al. 2012), it seems to be implicitly agreed that adaptation can take place at different levels of urgency, including different forms of voluntariness. Migration can be a direct response to actual environmental stress for food security purposes and in this sense is rather a coping than an adaptation strategy. It can also be a proactive adaptation strategy in response to expected environmental stress or other external stressors. Migration as a livelihood strategy - the term originates from the sustainable livelihood studies - relates in contrast, to an improvement in livelihood and well-being. In the environment-migration research, the terms “coping strategy” or “livelihood strategy” are used synonymously with “adaptation strategy”, although they might have different implications. Migration as a livelihood strategy will be explained in more detail in the next chapter.

In the environment-migration research, migration is mainly considered an adaptation strategy to diversify people’s income sources and reduce vulnerability to external environmental and non-environmental stress. According to Adger “vulnerability is the state of susceptibility to harm from exposure to stresses associated with environmental and social change and from the absence of capacity to adapt” (Adger 2006: 268).

It has become a dominant view in research that climate and environmental change exacerbate difficult living conditions and aggravate already existing problems, such as poverty and inequality (Meze-Hausken 2000; Bates 2002; Naik 2009; Grothmann et al. 2011). Migration is thus a result of inequalities of development that generate vulnerability to environmental changes (Lonergan 1998; Black 2001). Vulnerability to climate changes

and environmental stress have been identified as the crucial link between the environment and migration decision. Vulnerability depends on many factors, such as the level of development, local employment opportunities, availability of local livelihood strategies, people's assets and individual characteristics (Scoones 1998; Ellis 2003; Adamo 2008; Tacoli 2011c). Depending on the individual characteristics and socio-economic determinants people are to a different extent vulnerable to environmental changes.

As mentioned above there has been a noticeable shift from a focus on migrants to those who are not able to migrate as the most vulnerable in recent literature (e.g. Black et al. 2011b; Black et al. 2011a; Foresight 2011; Adger, Adams 2013; Adger et al. 2014; Black, Collyer 2014; Ober 2014). Research questions have also developed from understanding the conditions in which vulnerability translates into mobility to understand the conditions in which vulnerability hinders people from migrating.

Therefore, studies often argue that migration is an option only for the less poor or wealthier people while the poor often lack the means to move (Skeldon 1997; Van Hear 2004; Leighton 2011; Hummel et al. 2012). Pioneer migration to urban centres, long distance migration and international migration require the most human, social and financial capital and are thus often only available for wealthier households (Adger et al. 2014). Environmental change is assumed to negatively impact financial sources which would hinder migration ability (Adger, Adams 2013; Black, Collyer 2014).

Currently there are two main approaches on vulnerability to environmental changes: the Social-Ecological System approach and the Sustainable Livelihood Approach (Adger 2006). The present thesis draws on the later approach - focussing on a micro-level and individual perspective - as part of its theoretical framework, which will be explained in detail in the next chapter.

Critical views of adaptation and vulnerability in current environment-migration literature

The recent focus on migration as an adaptation strategy to environmental stress and on "trapped populations", although valuable, may have several negative implications:

First, the focus on "trapped populations" implies that migration is a strategy for the better-off and tends to lose sight of the fact that people might be forced to migrate.

Secondly, considering migration as an adaptation strategy assumes that migration is an environmental stress response for all people in an area affected by environmental changes, but underemphasizes the role of migration as a "normal" and well-established livelihood

activity to improve household well-being. It may also be an important part of everyday life in many parts of the world, particularly in rural marginal areas (Black 2001; Carr 2005; Tacoli 2011c).

Thirdly, the focus on migration as an adaptation strategy ignores the fact that people, particularly those who are better-off, migrate for a number of different reasons (Sakdapolrak et al. 2014).

Finally, vulnerability is usually portrayed negatively (Adger 2006) and the term adaptation also implies a negative response to stress. A focus on vulnerability and adaptation thus ignores the fact that people are also likely to migrate towards opportunities rather than away from problems (Klute, Hahn 2007; Meyerson et al. 2007). Environmental factors may influence the migration decision, but are usually not the primary reason (Adamo 2003, 2008).

Research suggests that economic and human development increase people's "capabilities and aspirations" and as a consequence also increase migration (de Haas 2008a: 13, 2008b: 10). Considering migration from areas affected by environmental changes overall as an adaptation strategy to acute or future environmental or other external stress ignores that individuals may have diverse motivations to migrate and limits their agency to a response to structural causes and needs. Moreover, the (sole) focus on the structural conditions and thus, on the question under which (structural) conditions environmental stress translates into mobility or prevents mobility, is insufficient. This is on the one hand because people are affected differently depending on existing inequalities and on the other hand because people perceive and deal differently with the impact of the structural conditions (c.f. Jónsson 2010; Hummel et al. 2012).

The present thesis therefore pursues a broader approach in order to better understand migration in areas affected by environmental stress. It focusses on people's migration motives - assuming that environmental problems might not necessarily correspond to the actual migration motives and that migration might be determined by individual interests and opportunities elsewhere. Furthermore, it focusses on the extent to which agency or structure influence a migration decision, which - according to Bakewell - remains a question of crucial importance in the analysis of migration processes (Bakewell 2010: 1690). This thesis assumes that both, migrating and staying, can be a result of a lack of choices or an expression of agency and aspirations. It is thus important to distinguish whether or not migration is a choice or a forced action.

2.5 Chapter conclusion: The current view on migration as an adaptation strategy to environmental changes is unsatisfying

The origins of the research on the linkages between climate and environmental change and human mobility date back to the mid-1980s and have since changed considerably. Initial focus on the number and terminology of “environmental refugees” as “victims” of climate and environmental changes has shifted to a focus on migrants as agents who adapt to acute or expected environmental stress. However, despite the significant development and progress in research, the linkages of environmental changes and migration remain unclear. Most studies come to the general conclusion that the nexus is complex and context-dependent because migration is in most cases multi-causal.

This thesis argues that the current research perspective of migration as an adaptation strategy in response to environmental changes is unsatisfying, because it tends to overlook that migration can be “forced”, might be a normal part of people’s lives or that people’s migration decision is influenced by motives that are related to opportunities or aspirations rather than to environmental problems. In order to overcome these “limitations” this thesis considers a broad variety of motives that might not necessarily be related to environmental factors and focusses on people’s capabilities and aspirations to migrate which are shaped by social-ecological conditions and individual characteristics. Based on this approach, the present thesis aims at providing a better understanding of why some people migrate and others stay in areas affected by environmental changes.

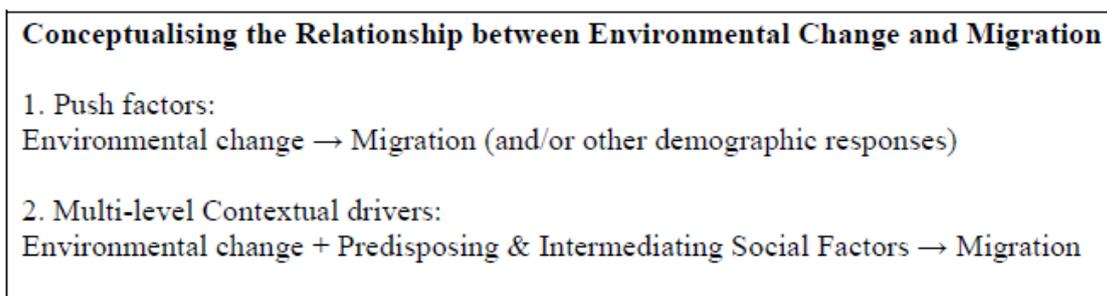
3 A development approach as a theoretical framework to analyse the environment-migration nexus

3.1 The conceptual development of the environment-migration nexus

With the increasing number of studies and publications in the mid-2000s, a growing body of conceptual literature emerged which aimed at developing the theoretical and conceptual foundation of the environment-migration nexus that had been widely absent earlier. The early attempts to conceptualise the relationship between environmental change and migration in the case studies on the environment-migration nexus related to the two different views on the linkages in the academic controversy described above. Case studies either referred to conventional push-pull models that assume a simple direct causality between environmental changes and migration, or they considered the multi-causality of migration and the more complex interplay of environmental and other predisposing and intermediating social factors (see Figure 2).

Gunvor Jónsson (2010) has provided a review of African case studies on the environment-migration nexus in which she classifies them as either “push factor” or “multi-level contextual driver” studies (Jónsson 2010). The “multi-level contextual drivers” studies relate to the critical social science perspective in the academic controversy and are often informed by social constructionism and political ecology, e.g. Carr (2005), de Bruijn and van Dijk (2003) (Jónsson 2010).

Figure 2: Conceptualising the relationship between environmental change and migration.



Source: Jónsson 2010: 6.

During the last decade, several studies attempted to develop conceptual frameworks to theorize the environment-migration nexus with differing foci (see e.g. McLeman, Smit 2006; Adamo 2008; Perch-Nielsen et al. 2008; Foresight 2011; Kniveton et al. 2011; Renaud et al. 2011; Schmidt-Verkerk 2011; Scheffran et al. 2012; Rademacher-Schulz et

al. 2012; Warner et al. 2012b)¹⁸. Most of these frameworks, however, focus on climate change or environmental hazards as starting points of migration rather than understanding migration as a multi-causal phenomenon that is embedded in a broader context. Moreover, many of them do not integrate “staying” as an alternative to migration and do not consider that people usually dispose of a portfolio of several local strategies to respond to external stress (exceptions are McLeman, Smit 2006; Foresight 2011; Schmidt-Verkerk 2011; Kniveton et al. 2011; Warner et al. 2012b). They suggest that all people in areas affected by environmental change respond with migration to these changes and are unable to explain why some people do not migrate from these areas.

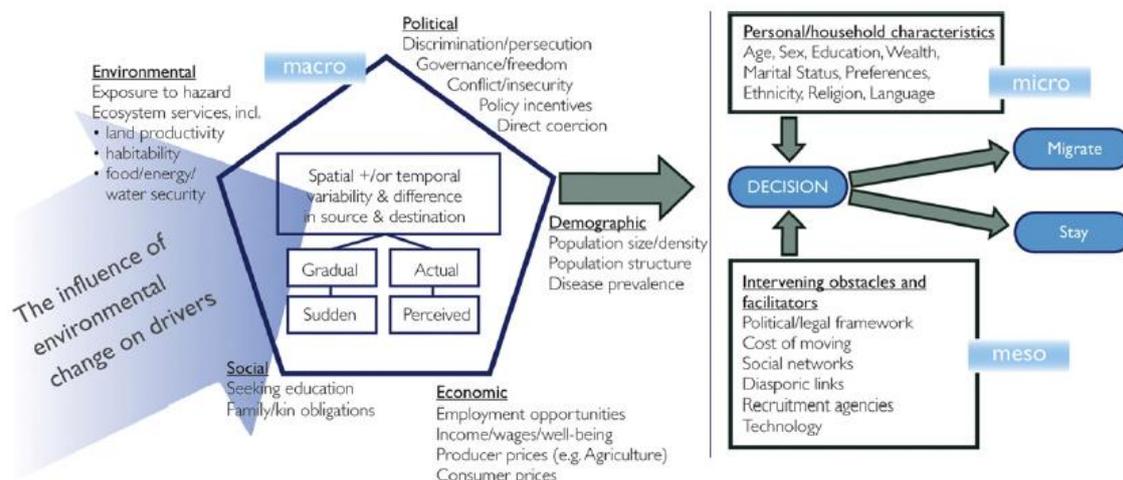
In recent years, new conceptual approaches have been developed - on the earlier frameworks listed above - which consider the multi-causality of migration, the role of migrants as active agents as well as responses to environmental stress other than migration. The most current - and in the author’s opinion also the most convincing - conceptual approaches to explain the environment-migration nexus have been developed by the “Foresight”-project (2011) (see Figure 3) and the “Where the rainfalls”-project (or “Rainfalls” - project) (Warner et al. 2012b) (see Figure 4). The conceptual model of the “Rainfalls” - project is based on the “Foresight” - project framework and thus can be considered an attempt to enhance the “Foresight” - framework.

Both conceptual frameworks - the “Foresight” and “Rainfalls” concept - include the multi-causality of migration by considering several macro (structural/institutional) factors that influence the migration decision, for example, demographic, economic, environmental, social and political drivers of migration. These factors in turn are influenced by environmental changes. Both approaches distinguish explicitly between environmental changes as external stressors from other drivers related to the environment, such as food

¹⁸ McLeman and Smit have developed a “model of migration in response to climate change, reflecting household capital” (McLeman, Smit 2006: 41), Adamo provides a concept on the “factors in population mobility as demographic response to environmental change” (Adamo 2008: 8), Perch-Nielson et al. have developed a “conceptual model of the influence of climate change on migration through flooding” (Perch-Nielsen et al. 2008: 378), Renaud et al. propose a “decision framework for determining environmental migrant sub-categories” (Renaud et al. 2011: e16), Kniveton et al. develop a “conceptual model of migration adaptation to rainfall change (MARC) displaying the role of rainfall change on an individual’s consideration of the migration decision” (Kniveton et al. 2011: 4), Schmidt-Verkerk provides a figure on the migration decisions in Mexico (Schmidt-Verkerk 2011: 191), Scheffran et al. develop a “framework for integrating migration into community adaptation to climate change” (Scheffran et al. 2012: 120), Rademacher-Schulz and Salifu Mahama provide a “conceptual framework for the Ghana case study” on rainfall variability and migration in the “Where the rain falls” project (Rademacher-Schulz, Salifu Mahama 2012: 17) and Warner et al. illustrate an “overall conceptual model for the « Rainfalls » research” in the “Where the rain falls” project (Warner et al. 2012a: 4; Warner et al. 2012b: 105).

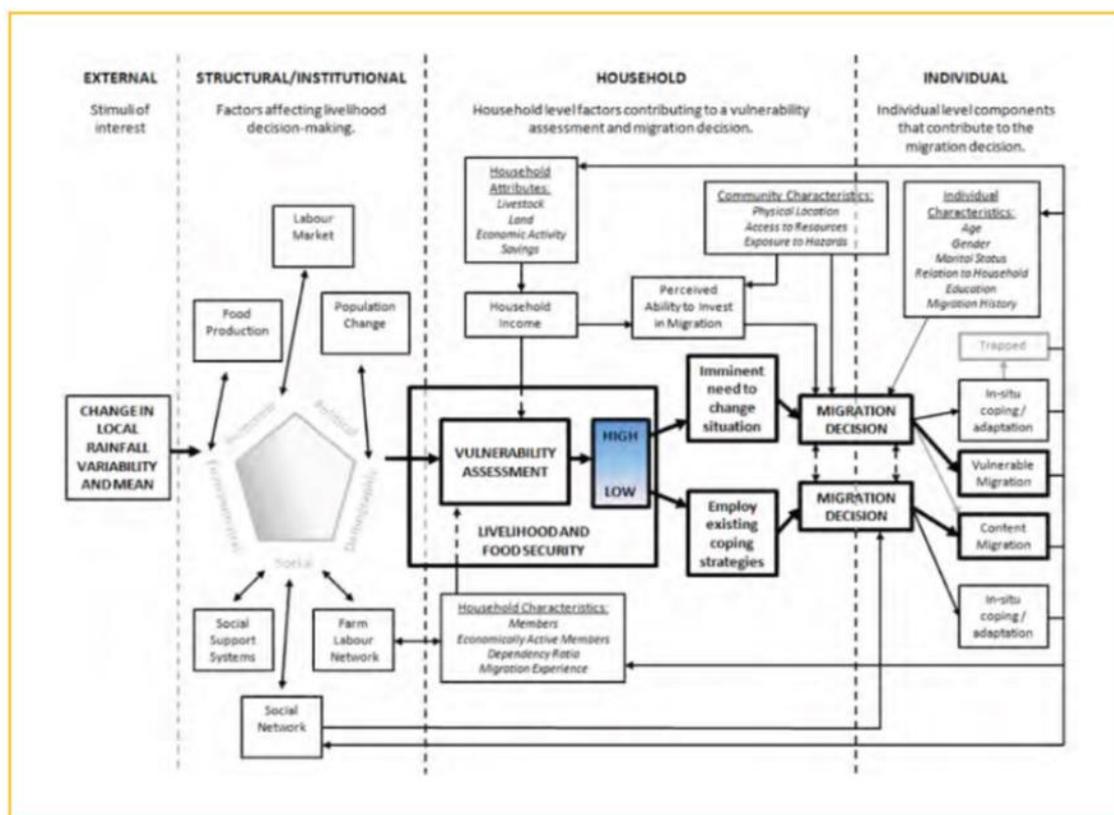
security or land productivity. The migration decision is not only influenced by macro structures, but also by household and individual characteristics.

Figure 3: A conceptual framework for the drivers of migration.



Source: Black et al. 2011a: S5; Foresight 2011: 12.

Figure 4: Rainfalls agent-based migration model conceptual framework.



Source: Warner et al. 2012b: 150.

In the “Rainfalls”-model, in contrast to the “Foresight”-approach, these characteristics are treated differently: While the household characteristics and situation influences the household’s vulnerability - with respect to livelihood and food security - shaped by the

macro-level factors, individual characteristics rather determine the choice for or against migration. In contrast, the “Foresight” - approach includes intervening obstacles and facilitators, such as political and legal frameworks or social networks, for the direct decision-making.

Both frameworks include migrating and staying as options with several notions of vulnerability. The “Rainfall”-project distinguishes between “trapped”, “in-situ coping/adaptation”, “vulnerable migration” and “content migration”. While the Foresight-framework at first suggests only two options, the decision between migrating and staying, the authors specify in the description of the framework that they understand migrating as divided into “choose to leave (migration)” and “forced to move (displacement)”, and staying comprises the options “choose to stay (immobile)” and “unable to leave” (trapped) (Foresight 2011: 15). Thus, both frameworks account for migration as a reaction to environmental change and as a part of adaptive response to change.

The main critique of the author of this thesis is that both approaches suggest that the migration decision in areas affected by environmental changes is mainly determined by the structural conditions in the area as well as the individual (and household) characteristics. From this, it follows that migration (or staying) is considered a reactive coping or a proactive adaptation strategy to these changes. At the same time, they do not consider that a migration decision often is determined by motives that are not related to environmental stress as well as by individual preferences and aspirations. This argument will be elaborated below in more detail.

Despite attempts to develop conceptual frameworks for the environment-migration nexus, most empirical case studies on the topic lack theoretical foundation (Lonergan 1998; Kliot 2004; Black et al. 2011a; Doevenspeck 2011; Hummel et al. 2012). The application of contemporary theory in studies on the environment-migration nexus is particularly rare, with only few exceptions (e.g. Ezra, Kiros 2001; Carr 2005; Doevenspeck 2005; Kniveton et al. 2011; Schmidt-Verkerk 2011)¹⁹.

¹⁹ Ezra and Kiros (2001) use the ‘New Economics of Labour Migration’ theory, the theory of survival strategy and a life course approach to explain migration in drought prone Northern Ethiopia, Carr (2005) explains the role of the environment in migration in Ghana with Foucault’s concept of power, Doevenspeck (2005) uses a combination of current migration theories to explain migration in rural Benin, Kniveton et al. (2011) apply the ‘Theory of Planned Behaviour’ to their Agent-based model simulations of future changes in migration flows for Burkina Faso and Schmidt-Verkerk (2011) related her study on climate change and migration in Mexico to the ‘New Economics of Labour Migration’ theory and the ‘Sustainable Livelihood approach’.

There are at least three possible ways to frame the linkages between migration and environmental changes with theory: first, to conceptualise the environment-migration research with current migration theory. Some researchers have argued to embed environmental factors as one driver of migration more explicitly in the migration theory rather than developing an own theoretical approach to explain the environment-migration nexus (Jónsson 2010; Doevenspeck 2011). Secondly, by applying a social-ecological system approach, as this has been suggested for example by Oliver-Smith (2010) and Renaud et al. (2011). Thirdly, the environment-migration nexus can be conceptualised with development theory and frameworks to explain migration as a consequence of vulnerability and a lack of development that are aggravated by environmental factors. This thesis will pursue the latter way, building on the critique of several scholars that migration in areas affected by environmental change is rather a development issue than a problem of environmental change.

Several scholars have argued to relate the research on the linkages between migration and environmental change to development theory, such as household or livelihood approaches (Kniveton et al. 2008; Leighton 2011; Morrissey 2012a; Greiner, Sakdapolrak 2013). The focus on vulnerability and thus development as a crucial link between environmental change and migration suggests that a development framework could be used to analyse the environment-migration nexus. Nevertheless, so far development theory has only been applied as a framework to a few studies on the environment-migration nexus.

For example Schmidt-Verkerk (2011) applies the SLA and NELM to explain climate change and migration in Mexico. Other studies do not explicitly relate their research to livelihood approaches, but the wording used and the shape of the conceptual frameworks suggest that they might have been inspired by livelihood research (e.g. Foresight 2011; Gray, Bilsborrow 2013). Moreover, Schade (2013) relates the concepts of capabilities and entitlements in combination with the livelihood concept to environmental migration and human rights, while Scheffran et al. (2012) apply aspects of human capabilities and sustainable livelihoods mixed with others concepts, like the social capital and networks as well as social resilience and co-development, to their study on migration and climate adaptation.

This thesis applies a theoretical framework in which it integrates aspects of the Sustainable Livelihood Approach and the Capability Approach with the above illustrated conceptual frameworks on the environment-migration nexus.

3.2 Migration as a livelihood strategy: the Sustainable Livelihoods Approach

The Sustainable Livelihoods Approach

The Sustainable Livelihood Approach (SLA) is a common approach in development research and practice to analyse people's livelihoods. The SLA is a useful tool to analyse the impact factors of a migration decision in areas affected by environmental changes for various reasons. Firstly, it acknowledges the main achievements of the environment-migration research, whilst containing some differences that can advance the research on the linkages between environmental change and migration. Secondly, it has strong conceptual parallels with migration theory and last but not least, it has been already successfully applied by a few studies on the environment-migration linkages.

In the 1980s, a general paradigm shift in contemporary social theory took place towards a positive view on (poor) people and development and has been described as an expression of the "Zeitgeist" (de Haan, Zoomers 2005: 29; de Haas 2010). Influenced by Giddens' (1984) structuration theory, more pluralist approaches evolved that recognised the importance of both structure AND agency (de Haas 2010). The SLA emerged from the concept of sustainable livelihoods, which was an attempt to go beyond previous approaches to better understand poverty. The livelihood approaches have been developed as a critical response to the structural macro perspectives on development in the 1970s and 1980s, such as dependency theory or world-system theory, and to the World Bank and IMF policies (Kaag et al. 2004).

As a counterweight to the structural approaches to development which tended to portray people as mere victims of structural constraints, more actor-oriented perspectives emerged in the 1980s (Goetze 2002; Kaag et al. 2004). In this context, various household and survival studies appeared that were based on micro-level research and focussed on local actors - often households - but concentrated on people's impoverishment and were rather pessimistic about the future of the poor (de Haan, Zoomers 2005; de Haan 2012). In the 1990s, the sustainable livelihood studies highlighted the human creativity and the agency of poor people in improving their livelihoods under certain structural conditions (Krantz 2001; de Haan, Zoomers 2005; van Dijk et al. 2007; de Haas 2010). Moreover, the sustainable livelihood studies with their positive view on people and development also evolved in response to the anti-development critique of intentional development approaches which had appeared in response to development projects that often failed to

generate positive outcomes for the people (Morse, McNamara 2013). Thus, the sustainable livelihood studies were motivated by the need to develop more effective poverty alleviation policies and had the objective to maximise the effectiveness of development interventions by analysing people's current livelihoods and identifying what is needed to enhance them (de Haan, Zoomers 2005; de Haan 2012; Morse, McNamara 2013).

The New Economic Labour Migration theory (NELM) derived from the same roots as the SLA as a critique on structuralist theories and to the neoclassical theory of migration (de Haas 2010; Abreu 2012). At about the same time, research on the environment-migration nexus emerged. Although at first it aimed at directing the attention to global warming, it has been strongly influenced by these critical approaches. Against this backdrop, it is not surprising that all three approaches - the environment-migration research, the SLA and NELM - have strong conceptual parallels, such as the focus on households, the emphasis on people's agency, or considering migration as a household strategy. While the environment-migration research focuses on environmental drivers, NELM aims at explaining migration, and the SLA places poverty in its centre.

The sustainable livelihood concept considered various factors that constrain or enhance poor people's ability to make a living in an economically, ecologically, and socially sustainable manner and other vital aspects of poverty such as vulnerability and social exclusion (Krantz 2001). The concept of sustainable livelihoods originates in the Bruntland Report (WCED 1987) as well as in the literature on food security and famines (Sen 1981; Swift 1989), the UNDP development report and Sen's work on capabilities (Sen 1985; UNDP 1990; Ellis 2003). Robert Chambers and Gordon Conway (1992) proposed the following definition of a livelihood in their influential paper "Sustainable Rural Livelihoods. Practical concepts for the 21st century":

"A livelihood comprises the capabilities, assets (stores, resources, claims and access) and activities required for a means of living: a livelihood is sustainable which 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; and which contributes net benefits to other livelihoods at the local and global levels and in the short and long term" (Chambers, Conway 1992: 6).²⁰

²⁰ This definition was later slightly modified by the IDS into: "A livelihood comprises the capabilities, assets (including both material and social resources) and activities required for a means of living. A livelihood is sustainable when

Further main contributions to develop the sustainable livelihood concept have been made by researchers of the Institute for Development Studies (IDS) at the University of Sussex, Brighton, UK, and the British Department for International Development (DFID). Moreover, the elaborations of the sustainable livelihood concept have been adapted by a number of development agencies (i.e. UNDP, CARE, DFID) to apply what is today known as an Sustainable Livelihoods Approach to poverty reduction (Krantz 2001)²¹.

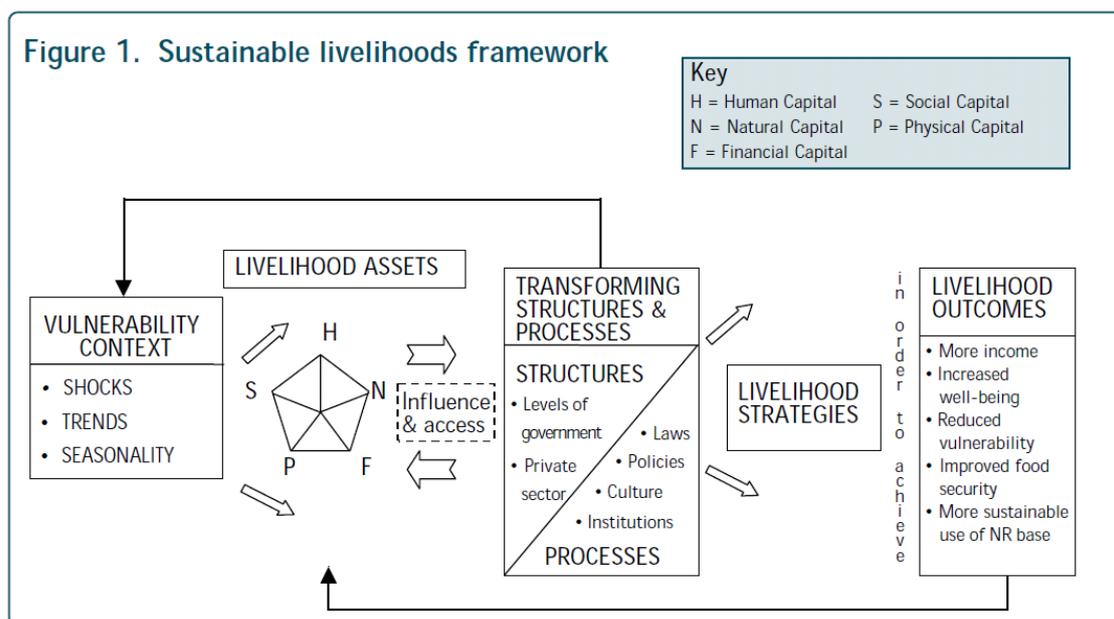
The Sustainable Livelihood Approach²² and related frameworks have been developed as a tool for development practice with the objective to improve the understanding of the livelihoods of poor people and to reduce poverty (Chambers, Conway 1992; Scoones 1998; DFID 1999a). The first framework design of the SLA had been developed by Scoones (1998: 4) and several development agencies and organisations, such as Care, Oxfam and UNDP, have subsequently adapted the framework to their development practices (Krantz 2001; Hussein 2002; Carney 2003). The DFID “Sustainable Livelihoods Framework” (DFID 1999a, 1999b; Carney 1998; Bohle 2007) is the most cited example (see Figure 5). Initially designed for the planning and assessment of development activities, the framework has been increasingly used for development research (DFID 1999b; Carney 2003). Today, the Sustainable livelihoods framework has become a popular approach for the implementation of development interventions and livelihood research. Activities and research related to this framework are mainly carried out at a micro-level in developing countries - particularly in rural areas - with the household as the main research unit (Morse et al. 2009; CPRC 2011).

it can cope with and recover from stresses and shocks, maintain or enhance its capabilities and assets, while not undermining the natural resource base” (Scoones 1998: 5).

²¹ For more detailed information on the emergence of the Livelihood Approach see e.g. Ashley, Carney (1999), Krantz (2001), de Haan, Zoomers (2005).

²² The core concept of the SLA includes: “Firstly, the approach is ‘people-centred’, in that the making of policy is based on understanding the realities of struggle of poor people themselves, on the principle of their participation in determining priorities for practical intervention, and on their need to influence the institutional structures and processes that govern their lives. Secondly, it is ‘holistic’ in that it is ‘non-sectoral’ and it recognises multiple influences, multiple actors, multiple strategies and multiple outcomes. Thirdly, it is ‘dynamic’ in that it attempts to understand change, complex cause-and-effect relationships and ‘iterative chains of events’. Fourthly, it starts with analysis of strengths rather than of needs, and seeks to build on everyone’s inherent potential. Fifthly, it attempts to ‘bridge the gap’ between macro- and micro-levels. Sixthly, it is committed explicitly to several different dimensions of sustainability: environmental, economic, social and institutional. Conflicts between these dimensions are, however, recognised” (CPRC 2011: 21) (see also DFID 1999a).

Figure 5: Sustainable livelihoods framework.



Source: DFID 1999: 2.1.

In the SLA framework, people's vulnerability context determines the ability of individuals or groups to achieve different livelihood assets (see Figure 5). The vulnerability context includes trends and seasonality which denote a long-term pressure but also shocks that denote a sudden pressure on people's livelihoods. These could be for example, environmental shocks (floods, droughts, etc.), conflicts, diseases, accidents, and economic shocks (DFID 1999b; Morse, McNamara 2013). In addition to environmental stressors, also social, economic and cultural stressors are included. According to the SLA, people's vulnerability to external stress differs by their assets and influences their choice of livelihood strategies. Vulnerability refers to the susceptibility to external risks, shocks and stress, but also to a lack of means of not being able to sustain a livelihood (Alwang et al. 2001).

The "assets" or "capitals" describe people's available resources that gives them the capability to act (Sen 1997 cited in Bebbington 1999). Assets include not only material well-being but also non-material aspects, such as education and skills and can be categorized in five different types: natural capital (e.g. land, biodiversity, water), physical capital (e.g. transport, energy, water and sanitation infrastructure, or access to information); financial capital (e.g. money flows and stocks, such as savings or livestock); social capital (e.g. networks and associations) and human capital (e.g. skills, education, health) (Scoones 1998; DFID 1999b; Ellis 2003). Assets give people the capability to be and to act as well as to engage and to change the world by challenging the structural conditions they live in (Bebbington 1999). Climate and environmental changes are likely to destroy the natural

capital and, if people strongly depend on the natural environment, the economic or financial capital as a consequence. In addition, natural disasters can destroy people's physical capital, such as their houses or infrastructure.

Assets can transform structures and processes, which in turn have an impact on the vulnerability context. Depending on the vulnerability context, the assets and the structures and processes, people choose different livelihood strategies or activities that lead to different outcomes. The livelihood outcomes in turn influence people's assets.²³ In this sense, migration - either temporary or permanently - is considered as one livelihood strategy - among others - to diversify people's livelihoods (Scoones 1998; Ellis 2003).

The SLA reflects the main agreements of the environment-migration research by acknowledging the multi-causality of migration and hence, regards migration as one possible activity as an outcome of people's vulnerability to environmental and other external stressors (Tacoli 2009a). With respect to the environment, the SLA considers environmental factors - seasonality, risks and long-term trends - as determinants of the vulnerability context and incorporates the social-ecological perspective by its focus on the links between (environmental) risks and well-being at the household level.

Migration in livelihood research

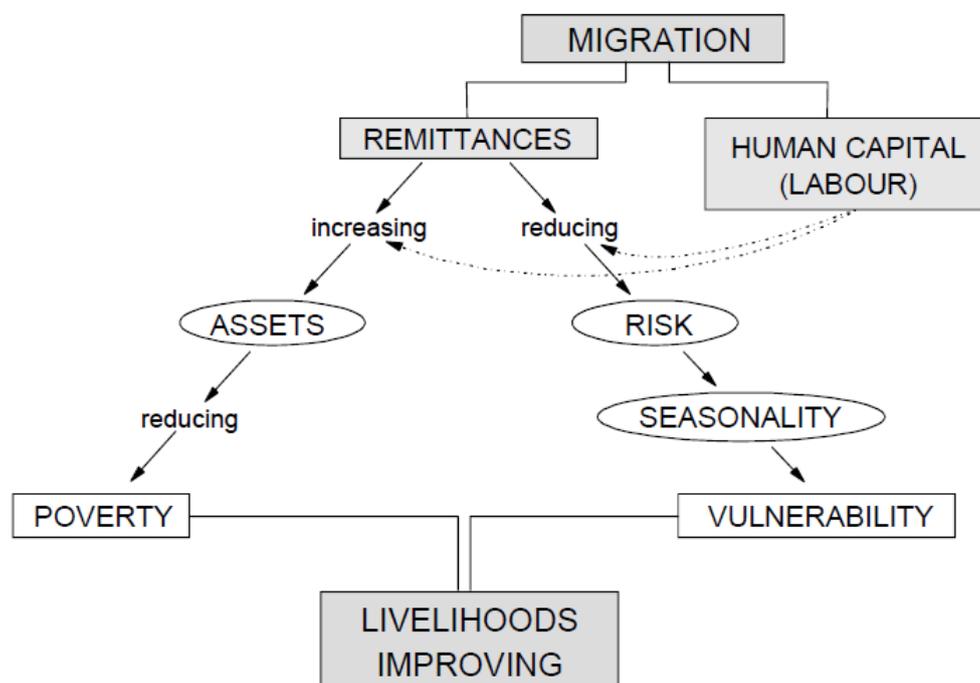
Migration and non-farming income was one of the cross-cutting themes applied to livelihood research since the end of the 1990s (Scoones 2009). Livelihood research considers migration as an important livelihood activity - of a set of different activities - to diversify the household's income (i.e. Davies 1996; Ellis 1998; Rain 1999; Breusers; Francis 2000; van der Geest 2004; Schraven 2010 - just to name a few).

Ellis (1998) defines rural livelihood diversification "as the process by which rural families construct a diverse portfolio of activities and social support capabilities in their struggle for survival and in order to improve their standards of living" (Ellis 1998: 4).

Migration as a rural livelihood strategy thus implied two dimensions (see Figure 6): on the one hand it aims at reducing the risk and vulnerability to external stress and seasonality and on the other hand it aims at improving the household' livelihoods and thus contributes to reduce poverty and to increase well-being (Chambers, Conway 1992; Scoones 1998; Ellis 1998; Fall 1998; de Haan 1999, 2000; Tacoli 2002; Ellis 2003).

²³ For further information on the Sustainable Livelihood Approach and the framework see e.g. DFID (1999a; 1999b), Ashley, Carney (1999), Krantz (2001), and Morse, McNamara (2013).

Figure 6: Positive links between migration and improving livelihoods.



Source: Ellis 2003: 8.

In its first dimension - as a strategy to reduce risk and vulnerability to external stress - migration is particularly important in areas where people depend on agricultural economic activities and are therefore highly vulnerable to climate change and environmental stress. Rural people often combine farm and non-farm activities in the same or different location to diversify the household income to be able to cope with actual or future stress (Ellis 2003; Schmidt-Verkerk 2011). In practice, however, in rural areas the potential to diversify income sources in the same location is often limited (Ellis 2003). This is particularly the case if agricultural intensification has been limited, e.g. due to lacking financial capital for fertiliser or technology, and if other rural employment opportunities are absent (Bebbington 1999). Therefore, out-migration from the rural areas of one or several household members often constitutes the only effective means to diversify income and to reduce their vulnerability to environmental risk and shocks and can be essential to ensure the food security of those household members who stay behind (Cordell et al. 1996; McDowell, de Haan 2000; de Haan 1999; de Haan et al. 2002; Skeldon 2002; Ellis 2003; Heine, Petersen 2008).

In developing countries where income in rural areas mostly relies on crop production, seasonality is a major cause of risk (Ellis 2003). Therefore, people usually take advantage of engaging in farm production in other rural areas or of non-farm activities by migrating to urban areas during the dry- or off-season, when less work has to be done in agriculture

(Ellis 2003; McLeman, Hunter 2010). Migration - particularly seasonal and circular migration - is thus often a supplemental activity rather than an alternative to agriculture (de Haan 1999: 30). It is a common strategy in rural areas to reduce the risks of seasonality and harvest failure and to support the family either by sending remittances back home or even by not eating from the common pot while in migration (de Haan 2000). Particularly, in the West African Sahel, migration is considered a common response to rainfall seasonality and the high variability of rainfall to ensure people's livelihoods (Rain 1999; de Haan et al. 2002; Henry et al. 2003; McLeman, Hunter 2010; Black et al. 2011a; Tacoli 2011c; Ober 2014). Usually, people combine several strategies, such as migration, agropastoral activities and in situ livelihood diversification (McDowell, de Haan 2000; Meze-Hausken 2000; de Haan et al. 2002; Schmidt-Verkerk 2011).

In its second dimension - as an activity to increase assets and to reduce poverty - migration is a proactive strategy based on choice and opportunity rather than a consequence of external stress (Ellis 1998). In many cases migration contributes to significant accumulation of financial means and increased well-being (Bebbington 1999). Farming alone often cannot provide rural people with an adequate living and satisfy the increasing need for cash, i.e. to pay for additional food, taxes, clothing, school fees etc. (Francis 2000; Dugbazah 2012). Thus, particularly seasonal rural out-migration in search for alternative job opportunities elsewhere is often considered the only or the most effective opportunity to satisfy the need for cash and to improve the household's living situation.

Remittances from migration can strengthen people's livelihood by investing in agriculture (e.g. land, seeds, fertilizer, material, and hired labour), in housing, in mobility devices and consumer goods or in education for better prospects for the next generation (Francis, Hoddinott 1993; Ellis 2003). The cash from migration thus not only allows other household members to stay in the rural areas, but can also lead to a remarkable improvement of housing and living conditions. In this case, migration goes far beyond a survival strategy and is part of an accumulation strategy to improve livelihood and to reduce or overcome poverty (Bebbington 1999).

Livelihood studies consider mobility as the norm in human history rather than the exception and argue that migration patterns often correspond to historical and cultural criteria (de Haan 1999, 2000; Ellis 2003). Throughout history migration has thus been considered a common strategy for people in various parts of the world (de Haan 2000). From a livelihood point of view, policies and development projects realized during the 1980s which

attempted to stop out-migration from rural areas have often failed, mainly because migration has been a well-established livelihood activity and is often critical to the viability of rural people's livelihoods (Bebbington 1999).

Both, SLA and NELM consider migration as a household livelihood strategy to maximise the household's income and to minimize the risks to the family's economic well-being by diversifying the household's livelihood portfolio (Stark, Bloom 1985; Lauby, Stark 1988; Stark, Taylor 1991; Massey et al. 1993; McGregor 1994; McDowell, de Haan 2000; Massey 1998; Goetze 2002; Ellis 2003; Kniveton et al. 2008; de Haas 2010; Schmidt-Verkerk 2011; Abreu 2012). In the environment-migration research migration is considered more specifically as an adaptation strategy to actual and future environmental stress but also acknowledges its importance for people's livelihoods.

The acknowledgement of the two purposes of migration as a livelihood strategy on the one hand to reduce the risk of external stress and on the other hand to increase assets in order to improve the household's livelihoods, is a major difference between the SLA and the environment-migration research. While livelihood research emphasises people's ambition and agency to improve the household's economic well-being and to reduce poverty, the environment-migration research considers migration rather as a short-term response to environmental degradation or an adaptation to future environmental stress (de Haan 1999; de Haan et al. 2002; Black 2001; Ellis 2003). By focussing on migration as a response to acute or future environmental stress, the environment-migration research neglects the importance of the aspects of accumulation of financial resources and that people's migration might not be driven by external stress but by the wish to improve their well-being or to change their lifestyles. Acknowledging that people pursue a goal, such as improving their livelihoods or changing their lifestyles by migrating could benefit the understanding of migration in areas affected by environmental changes.

Criticism on the SLA and household studies: neglecting power-relations and non-economic goals

The Sustainable Livelihood Approach has been criticized for several aspects despite its popularity and contributions as an actor-oriented perspective in development research and practice. The critique is related to methodical and practical issues, such as unclear aspects in comparing and measuring the different forms of capitals and that it is difficult and time-consuming to investigate people's complex and real livelihoods based on their own information (Schmidt-Verkerk 2011; Morse, McNamara 2013). Criticism also relates to

analytical issues, such as a too narrow focus on the local context failing to include global and local long-term changes, like climate change and a decline in agriculture or social transformation processes (Scoones 2009; Bryceson 2005). Two critical arguments are particularly relevant for the purpose of this study: the neglect of power-relations and intra-household dynamics as well as the focus on economic goals.

The first important critique on the Sustainable Livelihoods approach relates to its focus on the household as the analytical category. The household has been considered as the smallest and a homogenous unit of analysis and as a compromise between agency and structure approaches (Goss, Linqvist 1995; McDowell, de Haan 2000; Bakewell 2010; de Haas 2010; Morse, McNamara 2013). However, considering the household as a monolithic and altruistic unit, largely ignores unequal power relations, intra-household dynamics and conflicts within and between households or communities, in terms of age, class, ethnicity and gender (Chant 1992b; Waddington 2003; de Haan 2012) as well as individual decision-making (Carling 2005; de Haas, van Rooij 2010).

Therefore, feminist theory and empirical research exposed the household as an unsatisfactory analytical category which cannot function as intermediate between macro and micro levels or between structure and agency (Goss, Linqvist 1995). Critical feminist development scholars had already in the 1990s argued that power is not equally distributed within a household but differs among men and women - as well as along other categories - and that it is thus important to consider intra-household dynamics within development studies (Chant, Radcliffe 1992; Ruppert 1998, 2008; Whitehead, Kabeer 2001; Kabeer 2003). They argue that the focus on households assumes that household decisions are based on a consensus between its members and are made to the advantage of the whole group, while actually inequalities and conflicts between generations and genders are common within many households (Waddington 2003; de Haas 2010; de Haas, Fokkema 2010; Schmidt-Verkerk 2011). Particularly for temporary migration, the individual's and the household's motives to migrate and the expected goals often conflict (Kaag et al. 2004; de Haas 2010). Gender has been argued to be an essential category in explaining migration decisions and in contributing to a higher sensitivity on the differences between men and women with respect to the migration processes and their effects (de Haan 1999). However, the linkages between gender, migration and rural livelihoods still remain relatively unobserved (Dugbazah 2012).

In the Sahel - with its patriarchal structured societies- age and gender are particularly important categories which determine decisively the migration decision-making and migration processes (Goss, Linquist 1995; de Haas, Fokkema 2010). In Sahel societies, men and parents are attributed with more power in the household, compared to women and children, and thus dominate the migration decision regarding their own migration and the mobility of other family members (de Haas, Fokkema 2010; de Haas, van Rooij 2010). Consequentially, household-based theories assume that the male household-head represents the collective interests of all household members (Goss, Linquist 1995). Household members with less power due to their age and gender might either be put under pressure to migrate or be excluded from migration (de Haas, Fokkema 2010). In addition, some household members might benefit more from remittances and other resources generated from migration than others. Usually those with the most power also benefit the most (de Haan et al. 2002; de Haas, Fokkema 2010). Since labour migration has been dominated by male migration in many parts of the world (de Haan et al. 2002; Carling 2005), men might have benefited particularly from migration compared to women. These power inequalities - that shape the migration decision - can in turn reinforce and reproduce existing power inequalities.

This suggests that the decision for or against migration is not a consent household decision of equally powered household members but rather the outcome of a struggle between powerful and powerless household members or simply the decision of one or several members with the most power within the household (de Haas, Fokkema 2010). The focus on households tends to romanticise peasants and rural communities in the South, implying that each member of the household cooperates willingly in favour of the whole household to improve the living situation, while not burdened with the individualism of Western societies (Goss, Linquist 1995). It rules out the agency of individual household members and, hence, their potential ability to revolt against the will of powerful household members and to change social structures (de Haas 2010). Empirical research on migration decision-making, however, suggests that household members often pursue their own individual interests, while sometimes compromising collective interests and struggling against the unequal power relations within the household (Goss, Linquist 1995).

The second relevant critique of the SLA is that it focuses on economic goals while ignoring other reasons or objectives of migration as explanations for the choice for migration from a set of activities. The focus on economic goals of migration and on labour migration results from the assumption that migration is a strategic household decision (de Haas

2010; Schmidt-Verkerk 2011). Critics argue that the focus on strategic economic decisions portrays people as *homo economicus*, ignoring their “perceptions and ideas, their hopes and fears, their norms and values” (Kaag et al. 2004: 5). The livelihood approaches assume that people’s behaviour is based on strategic decisions to maximise the economic benefit, ignoring the influence of culture, emotions and altruism as well as individual interests and other non-economic benefits (Arango 2000; Schmidt-Verkerk 2011).

In contrast to that, migration research increasingly recognises the importance of non-economic reasons for migration (Klute, Hahn 2007). For instance, Hahn and Klute’s (2007) highlight the meanings of migration for the migrants themselves rather than for the household and their own (economic and non-economic) motivations for migration (Klute, Hahn 2007). The focus on the household and the concept of migration as a household strategy does clearly not adequately consider prospects of adventure or (other) individual meanings of migration. Moreover, the focus on household’s needs underestimates the importance of people’s perceptions of relative deprivation - their economic status in relation to that of others (Stark, Taylor 1989) - that might be a stronger motivation for migration than household consumption (Goss, Linqvist 1995).

Although the SLA is considered as a people-centred approach, in their book “Sustainable Livelihood Approach. A critique of Theory and Practice”, Stephen Morse and Nora McNamara (2013) criticise the approach for largely ignoring people. According to Morse and McNamara, this is the case because the SLA ignores key aspects of human existence, such as culture, leisure and other aspects that make life enjoyable (Morse, McNamara 2013). They argue that meeting people’s needs includes more than a means of living and call for recognising people’s dreams and expectations. People’s dreams and expectations “help to frame where people wish to be” and “how their livelihoods can be enhanced to meet their aspirations” (Morse, McNamara 2013: 167). They thus propose to consider “lifestyle” in the SLA, including people’s expectations and realisations of a certain lifestyle and changes in lifestyle and expectations as an outcome, in addition to the livelihoods concept.²⁴ Lifestyle does also include the consumption and accumulation of goods - through migration and other activities - that people do not need for a livelihood but which they perceive as important, e.g. to enhance their social standing in the community (Morse, McNamara 2013).

²⁴ Morse and McNamara define lifestyle „as the ways in which a person or group lives“ and livelihood as “a means by which people underpin their lifestyle” (Morse, McNamara 2013: 167).

Approaches that focus on the economic goals of migration are suitable only to a limited extent to explain migration which takes place due to other more individual reasons (Arango 2000; de Haas 2010; Schmidt-Verkerk 2011).

The critical arguments presented above question the household as the main research category and the view on migration as a strategic household decision. Although this critique has been directed towards the SLA, it applies also to the New Economics of Labour Migration theory²⁵ and the environment-migration research, since all three approaches focus on the household and consider migration as a household strategy (de Haas 2010; Schmidt-Verkerk 2011). The critique suggests consideration of power-relations across gender and age as well as individual and non-economic reasons for migration such as lifestyle, dreams and expectations in the analysis of migration in areas prone to and affected by environmental change instead of only focussing on the household's needs as drivers of migration.

The SLA seems to be an appropriate framework to analyse the environment-migration nexus due to its conceptual parallels to NELM as contemporary migration theory and the environment-migration nexus and the acknowledgments of its main achievements. However, considering this criticism, the SLA by itself - despite its advantages - might not serve as a suitable theoretical framework to analyse the environment-migration nexus but requires additional concepts that can respond to the critique.

3.3 The individual perspective in the development framework: the Capability Approach

The Capability Approach

The Capability Approach can take into account the main criticism on the SLA - which also applies to the environment-migration research - and is therefore able to complement the Sustainable Livelihood Approach due to various reasons: First, it focuses on individuals - not on households - and so takes into account different power inequalities among people and within a household - which seems more suitable to analyse migration. Secondly, it recognises that individual preferences influence people's choices and goes beyond economic and material considerations. Thirdly, Amartya Sen's work on entitlements

²⁵ With regard to the New Economics of Labor Migration theory (NELM) Hein de Haas (2010) suggests to remove the "L" from "NELM" to make the theory more applicable to other forms of migration (de Haas 2010: 253).

and capabilities has heavily influenced the livelihood research and the SLA. Thus, they have several conceptual parallels, i.e. they place the people at the centre and focus on their agency. In the following, this thesis only gives a short overview on the Capability Approach - focussing on the main aspects that are relevant for a theoretical framework to analyse the linkages between environmental changes and migration.

The Capability Approach has been developed by Nobel laureate Amartya Sen and is based on his understanding of “development as freedom”. “Development as freedom” implies the idea of the individual’s freedom as the ultimate end and principal means of human development (Sen 2000). Sen’s understanding of development goes beyond economic growth and is regarded as “a process of expanding the real freedoms that people enjoy” (Sen 2000: 3). In this view, the Capability Approach initiated a major change in development theory by shifting the focus of the analysis of development from growth of the gross national product to the people’s freedoms (Sen 2000; Alkire, Deneulin 2009). The Capability Approach focuses on individual freedoms and (the expansion of) people’s “capabilities” to lead the kind of lives they value and have reason to value (Sen 2000). It thus focuses on what people are effectively able to do and to be, on the quality of life and on removing obstacles in people’s lives (Robeyns 2005). Poverty is one major obstacle to people’s development and is considered as “capability deprivation” (Sen 2000: 87).

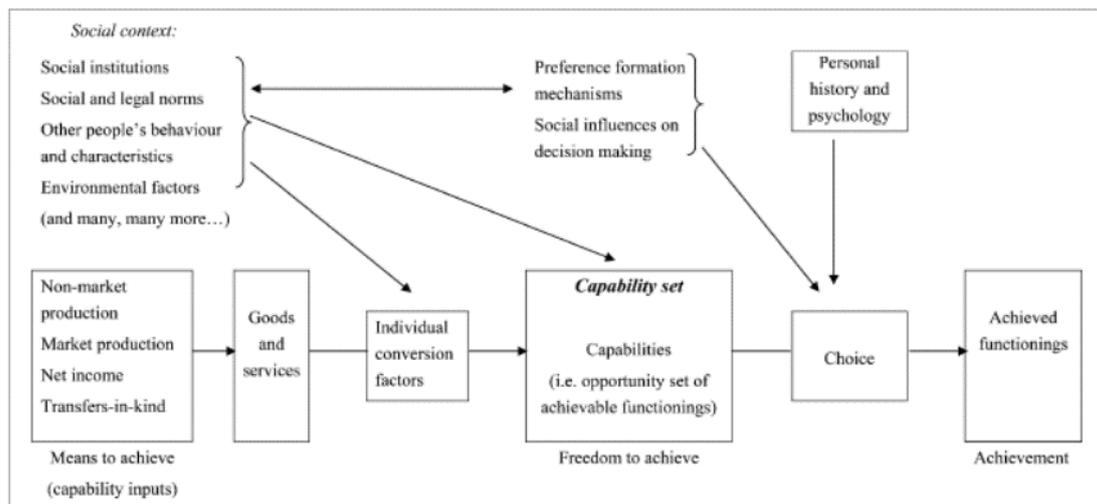
Key terms of the Capability Approach are “functionings”, “capability” and “agency”:

- Functionings: reflect “the various things a person may value doing or being” (Sen 2000: 75).
- Capability: refers to the freedom to achieve functionings that are feasible for a person. “Capability is thus a kind of freedom: the substantive freedom to achieve alternative functioning combinations” (Sen 2000: 75) and to lead the kind of life s/he has reason to value (Sen 2000).²⁶
- Agency: an agent is defined “as someone who acts and brings about change, and whose achievements can be judged in terms of her own values and objectives, whether or not we assess them in terms of some external criteria as well” (Sen 2000: 19).

²⁶ Sen gives the example of a fasting and a starving person who may have the same functioning achievement in terms of eating, but they have different capability sets because the first can choose not to eat while the second cannot choose between eating and not eating (Sen 2000: 75).

Robeyns proposes a schematic representation on the Capability Approach which describes the main aspects of the CA (see Figure 7). Goods and services, social institutions and environmental factors are only some means to create and expand people's capabilities and to enable functionings. Robeyn gives the example of a bicycle (good) that enables mobility (functionings) (Robeyns 2005: 98). These means can be converted into an individual functioning - depending on personal conversion factors (e.g. personal characteristics and skills), social conversion factors (e.g. social norms and power relations) and the environmental conversion factors (e.g. climate and geographical location). Depending on their capabilities, people can choose and realize functionings.²⁷ Material circumstances (e.g. income) and non-material circumstances, such as the social context and the individual preferences and aspirations or different ideas of good lives, influence people's choices they make from the capability set (Robeyns 2005). Despite its focus on individuals, the CA considers the cultural context and the constraints and opportunities of societal structures and institutions on individuals as crucial in defining and evaluating capabilities (Sen 1992, 2000; Nussbaum 2011).

Figure 7: A stylised non-dynamic representation of a person's capability set and her social and personal context.



Source: Robeyns 2005: 98.

²⁷ Example for a better understanding: a bike (good), being able to ride around – by knowing how to ride and being in a good health condition (capability); riding around/mobility - as something that could be achieved (doing or being) (functioning) (Robeyns 2005; Alkire 2011).

Mobility, environment and the Capability Approach

The Capability Approach does not explicitly refer to the natural environment and environmental stress. However, the CA recognizes that social and environmental factors influence people's conversion factors and their capability sets. Environmental changes or environmental stress can restrain people's capabilities and can aggravate existing vulnerabilities and poverty and can thus be considered as a form of capability deprivation. In addition, Sen has elaborated on the causes of famines extensively (Sen 1981, 2000). He focussed on the economic power and substantive freedoms of individuals and families to produce or to purchase food, thus their entitlements over food. Environmental stress or natural disasters, like droughts, are only one of several factors that can threaten people's food security: by influencing people's "endowments" or assets (e.g. land or labour), their "production possibilities" (e.g. employment opportunities, wage rates) and their "exchange conditions" (e.g. relative prices to sell and buy goods) (Sen 2000: 162–163). It can thus affect people or certain groups or parts of a population differently (Sen 1986, 2000).

Only very few studies on the linkages of migration and development and even fewer on the environment-migration nexus attempted to apply the Capability Approach. With respect to mobility and migration, studies have stated that mobility depends on and reflects people's ability to choose their preferred place of residence (UNDP 2009). Mobility or migration is a functioning chosen from the capability set and is considered an essential component of people's freedom to lead the lives they value and have reason to value. It includes the freedom to move as well as the freedom to stay in one's preferred location (UNDP 2009; de Haas, Rodríguez 2010). The Capability Approach entails that migration can be analysed from a multisided perspective: migration can reflect an outcome of both the lack and the possession of capabilities, depending on the social-cultural context (Bri-ones 2009). In other words, it can constitute a necessity or an opportunity/choice (UNDP 2009). Although there is a considerable difference between migration out of choice and out of necessity, the distinction is not easy in practice.

With respect to the environment-migration nexus, there are very few studies that apply the concept of capability. Schade (2013) makes an attempt to apply the concepts of entitlements and capabilities as well as the livelihood research to the environment-migration nexus with a focus on human rights. She understands the term "functionings" in the CA as comparable to "livelihood outcome" in the SLA and considers migration "as a means - a strategy - to achieve certain functionings" (Schade 2013: 239). The view on migration

as a mean and the outcome as a functioning contrasts the above mentioned studies which consider migration itself as a functioning. However, Schade relativizes her statement by noting that mobility also can be a functioning to achieve other functionings (Schade 2013). Similarly, Scheffran et al. (2012) refer to migration as a means to acquire resources, such as financial capital, knowledge and education, that support human capabilities, development and sustainable livelihoods.

Moreover, Schade comes to the conclusion, that “in any case - to be mobile - whether practiced or not - is an expression of capability” (Schade 2013: 239). This contrasts the understanding of Briones (2009) and the author of this thesis, that mobility can be an expression but also a lack of capability. In the environment-migration research, the notions of “forced” migration would imply a lack of capability to choose staying as an option.

With respect to the relationship between vulnerability and capability, Schade argues to move conceptually from vulnerabilities to capabilities to capture the potentials and limitations of human agency in environmentally induced migrations. Other studies, however, relate these two concepts to each other by noting that “vulnerability reflects threats to choices and capabilities (...). People are vulnerable when they lack sufficient core capabilities, since this severely restricts their agency and prevents them from doing things they value or coping with threats“ (UNDP 2014: 23). Vulnerability to environmental and other external stress thus restricts people’s capabilities to do or be what they value, including the decision to stay or to migrate. Human development in contrast aims at reducing people’s vulnerability and to enlarge people’s capabilities and choices (UNDP 2014).

This study considers the two views on mobility or migration as an expression or a lack of capabilities - which are influenced by people’s vulnerability to environmental and other external stressors - by focussing on people’s ability to choose between staying and migrating as options for action in areas affected by environmental change.

3.4 A new conceptual approach: capabilities and aspirations as core concepts to analyse the environment-migration nexus

Synthesising the theories presented above, this thesis proposes a new conceptual approach to analyse the environment-migration nexus which is strongly inspired by development theory but also considers the conceptual development in the environment-migration research (described above). The new conceptual approach focuses on the capability of people to migrate or to stay and their aspirations as core concepts. It therefore supports the

main argument of this thesis that it is insufficient to focus on the structural (environmental) conditions to explain migration in areas affected by environmental changes but that also individual preferences and aspirations with respect to migration have to be taken into account in order to distinguish if people need or want to migrate or stay.

Therefore, the approach applies the main features of the Sustainable Livelihood Approach and the conceptual frameworks of the environment-migration research to analyse the local context and the structural, social-ecological conditions of migration. Special emphasis is given to the environmental factors in the vulnerability context and to migration as one livelihood activity among others. In addition, the new approach adapts certain aspects of the Capability Approach, such as focussing on individuals and considering economic goals and non-economic aspects as well as individual preferences and expectations, and in doing so responds to the main criticisms of the SLA.

The new conceptual approach has not been developed prior to the analysis of the data as a static theory to be tested by and applied to the empirical data, instead, it has been developed during the research process and has been a part of the data analysis based on Grounded Theory (see Chapter 5.3).

Why is it important to include people's (individual) capabilities and aspirations to migrate or not in the framework for the analysis of the environment-migration nexus?

According to the Capability Approach, people have different options and capability sets. Poverty or other (e.g. environmental) stressors restrain these options, while development enlarges the capability sets. However, which of the available options are chosen from the capability set depends on people's preferences and aspirations. Migration as an expression of capabilities implies that people have the ability to decide between moving and staying, and that migrating - instead of staying - has been chosen as an available option from their capability set.

Recently, scholars of the environment-migration research have emphasized that often the poorest people are "trapped" and not able to use migration as an adaptation strategy to environmental stress (Black et al. 2011b; Adger, Adams 2013). These people thus lack the capability to decide freely between migrating and staying. Black and Collyer specify that "to be 'trapped', individuals must not only lack the ability to move but also either want or need to move" (Black, Collyer 2014: 52). It is thus important to distinguish between not wanting and not being able to migrate, although this might be difficult (Black, Collyer 2014). In the situation of environmental change according to Black and Collyer

“low levels of capital indicate both high vulnerability to crises and low ability to move away” (Black, Collyer 2014: 54).

However, while some people might not have the capability to choose migrating as an option, others might not be able to choose to stay. Migration as a lack of capabilities implies that staying is no available option and refers to “forced” migration. In this case low levels of capitals might not indicate a low ability to move away but a low ability to stay. Thus, in a more general manner low levels of capitals indicate a low ability to choose between migrating and staying. With respect to the SLA, people’s assets and their socio-economic position strongly influence whether people have the capability to choose between migrating and staying (Waddington 2003; Schmidt-Verkerk 2011).

The focus in the environment-migration research on the structural conditions, and thus mainly the push-factors of migration might explain whether or not people have the capability to choose migrating or staying as an option, but cannot explain why some people migrate and others do not under the similar (structural) conditions. Here, individual preferences and aspirations come into play. Individual preferences and aspirations usually determine the choice from the capability set (Carling 2002; Robeyns 2005; de Haas 2008a). By using the term “individual aspirations” the author refers to individual dreams, wishes, expectations, perceptions, taste and preferences.

The restricted view on migration as a strategic household strategy in environment-migration research not only fails to acknowledge intra-household dynamics and social power relations but also presumes that migration is predominantly economically motivated, ignoring other reasons for migration, such as family reasons or education. The understanding of development - as enhancing individual capabilities and choices - widens the narrow focus of the environment-migration research on migration as a household strategy based on economic considerations to a broader understanding of people’s action and their individual motives of migration. Although an essential share of migrants in developing countries might indeed migrate in response to external stressors in which migration states a household livelihood strategy, many others might migrate from the same area for differing reasons. This testifies to a more positive view on “migration towards opportunities” instead of being driven by the household needs and unfavourable conditions - even in areas affected by environmental change. At the same time, this helps to explain why migration from areas affected by environmental changes is not only common among the poor and vulnerable people but is also characteristic of the better off which suggests that

migration must not necessarily constitute a coping or adaptation strategy of households, but may also constitute a way of life of individuals.

Increasing development, such as improvements in transport, infrastructure, communication, health services, education, access to information and local economic opportunities, and the related growing level of wealth increases not only people's capabilities but also their aspirations to migrate (de Haas 2007). Moreover, people's migration usually has social and economic effects for the household and the community (de Haas 2010). Remittances from migration allow for investments and can contribute to improving a household's livelihood but at the same time also can generate inequality and relative deprivation within a household and a community (McDowell, de Haan 2000; de Haan 2000; Ellis 2003). This in turn can also influence other people's aspirations and widen their capabilities to migrate or to stay (Waddington 2003; de Haas 2010).

The focus in the environment-migration research on migrants as agents, however, only ascribes a certain degree of agency to the people by considering their migration as mainly related to coping with and adapting to external stress (de Haan 2012). Migration mainly is considered a response to difficult economic conditions in the area of origin of the migrant and her/his family rather than an opportunity for those who choose to leave temporarily or permanently, as suggested by some authors (e.g. Cresswell 2006; Klute, Hahn 2007; Meyerson et al. 2007; Adamo 2008; de Haas 2010). Therewith, it implies that mobility is an undesirable necessity or need in order to adapt to unfavourable conditions in the home area and widely neglects that people might creatively exercise their agency to realize their aspirations - which has been described as "sedentary bias" for the analysis of migration in developing countries (McDowell, de Haan 2000; Klute, Hahn 2007; Bakewell 2008). Despite the acknowledgment of agency of migrants from an areas affected by environmental changes in developing countries, the view on migration still neglects that people might have aspirations related to their mobility and that migration might be motivated by motives other than poverty or food insecurity.

Several migration scholars have already called long ago for a better account of individual choices in migration theory and for a more detailed analysis of the aspirations of migrants (e.g. de Haan 1994; Massey 1998; Stark 2003; de Haas 2010; Bakewell 2010; Van Hear 2010). They argue that the propensity to migrate typically does not merely rest upon household cost-benefit calculations, but also depends on people's aspirations. Also in areas affected by environmental change, migration might not only be influenced by the unfavourable structural conditions but by people's preferences and aspirations. Davies

(1996) for example notes in her study on adaptable livelihoods and food security in Mali that the “overwhelming impression from migration data was that in contrast to the idea of decisions being made at key moments of the year (e.g. after the harvest, returning before the next agricultural campaign), household migration in vulnerable livelihood systems is a much more fluid affair in response to diverse opportunities ranging from long-term reciprocal arrangements to news of employment opportunities in particular areas or to individual whims. There was little evidence of these decisions being driven primarily by the need to leave in order to reduce household consumption, although this was cited as an important contributory justification” (Davies 1996: 75).

The recent conceptual approaches on the environment-migration nexus distinguish between voluntary and forced mobility and immobility (cf. Foresight 2011; Warner et al. 2012b). However, the decision is presumed to be determined by the structural conditions and individual characteristics. Recent attempts to integrate individual characteristics in the analysis of the linkages between environmental changes, such as gender, age and ethnicity, are not sufficient to explain whether or not migration is chosen from the capability set. These characteristics are often related to power inequalities and social norms and thus mainly contribute to explain the social context and structural conditions of migration, but not why some people choose to migrate while others do not. Aspirations, however, play no role at all in the environment-migration research, not even to explain the choice of migration.

Until today there are only very few empirical studies that explicitly consider people’s ability or capability and aspirations to explain migration. Carling (2002) proposes in his case study on the migration from the Cape Verde Islands to Europe a model which he calls the “aspiration/ability model” (Carling 2002: 12). This model considers people’s aspirations to migrate to Europe and their ability to realise this wish by considering impact factors on the micro-level (e.g. individual characteristics) and on a macro-level (e.g. the structural context) (Carling 2002). He identifies three different categories of migrants: the “voluntary non-migrants” - people who do not aspire for migration, the “involuntary non-migrants” - people who aspire to migrate but do not have the ability to do so and the “migrants”, defined as those who have or had the aspirations and the ability to migrate (Carling 2002: 12).

Though, Carlings does not explicitly refer to the Capability Approach and focuses on international migration, his approach can be useful for the conceptualisation of the envi-

ronment-migration research with a focus on internal migration. He highlights that people's ability and aspirations to migrate distinguishes between whether people stay voluntarily or are forced. For the environment-migration research however, one would have to consider whether people stay or migrate voluntarily or are forced. This would lead to an additional category: the "forced migrants" - as those people who do not have the aspirations to migrate but no ability to stay and thus have to migrate.

In sum, the new conceptual approach distinguishes between the need and the wish to migrate by focussing on whether or not people have the capabilities to choose to migrate or to stay from their capability set and why they do so by focussing on their individual preferences and aspirations. In doing so, the new conceptual approach shifts the current focus of the environment-migration research on "under which conditions environmental change translates into mobility" to "(under which conditions) do people have the capabilities to choose between migrating and staying and what influences their choice". This helps explaining why some people migrate and others do not when living under similar conditions and facing similar environmental risks. Moreover, it challenges the "sedentary bias" in migration research in developing countries and the restrained view on agency applied to the environment-migration nexus by considering people's individual aspirations in the migration decision.

3.5 Chapter conclusion and practical considerations

This thesis uses a conceptual approach inspired by development theory to analyse the environment-migration nexus in two Sahelian study areas. The conceptual framework is based on a combination of current environment-migration frameworks, the Sustainable Livelihood Approach (SLA) and the Capability Approach. The use of the SLA is appropriate because it acknowledges the main achievements of the environment-migration research, has strong conceptual parallels with migration theory and has already successfully been applied by studies on the environment-migration linkages. However, considering the criticism on the SLA, the conceptual framework used in this thesis, integrates elements of Sen's Capability Approach, such as the focus on individuals instead of households, the consideration of non-economic reasons in the migration decision and the acknowledgement of individual preferences and aspirations that influence people's choices to migrate or not.

The new conceptual approach focuses on individuals and their capabilities to migrate and to stay as well as their individual preferences and aspirations with respect to the migration

decision. By focussing on people's capabilities to migrate or to stay and the structural - particularly the social-ecological - conditions that shape these capabilities, it considers a macro-level perspective. At the same time, it integrates a micro-level perspective by focussing on individual behaviour and aspirations. Depending on people's capabilities to migrate out of environmental fragile environments or to stay, migration can be an expression of choice or a lack of it. Therefore, the conceptual approach distinguishes explicitly between the necessity and the wish to migrate (or to stay) in the context of environmental changes and the capability to realise this wish. By considering people's aspiration it challenges the view on migration in developing countries as an inevitable consequence of unfavourable living conditions. It directs the focus on opportunities and non-economic migration motives and contradicts the current view in environment-migration research on migration as an adaptation strategy in response to environmental change and household needs. The focus on individual aspirations and preferences as determinants of the migration decision is a precondition to explain why some people that live under similar conditions migrate while others stay.

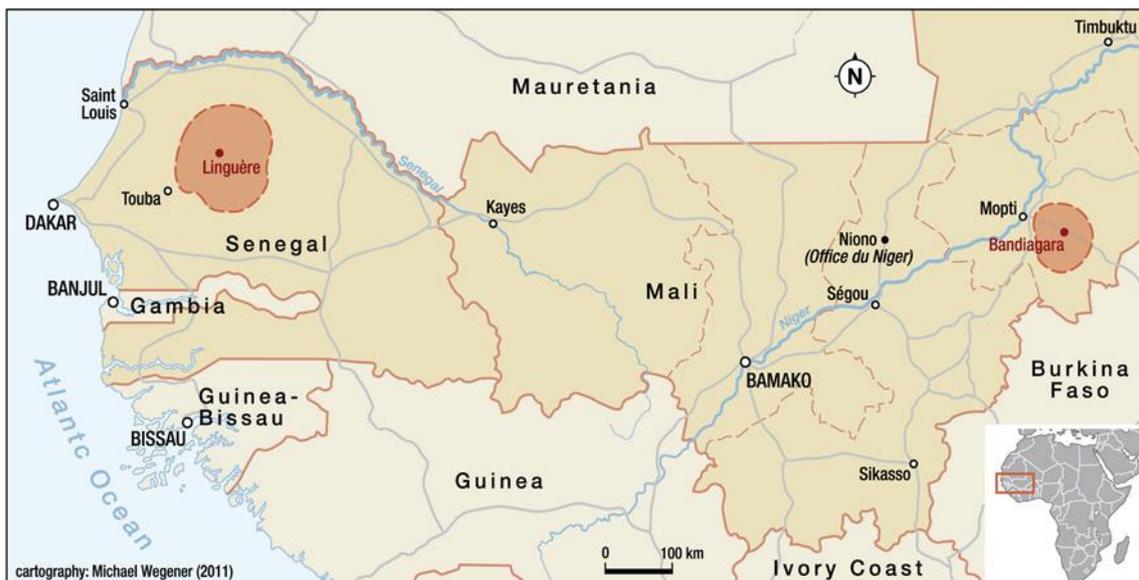
4 Study areas and setting

4.1 A comparative approach

This study focuses on two study areas for its empirical research on the environment-migration dynamics in the West African Sahel: Bandiagara in Mali and Linguère in Senegal (see Figure 8). The two regions were selected for the empirical research in the project “MICLE - Migration, Climate Change and Environment”. The focus on the West African Sahel was guided by the international attention on this region in view of the social consequences of climate change explained below.

The two rural study areas around Linguère and Bandiagara were selected for several reasons. First, both study areas show noticeable indications for environmental change, such as highly variable precipitation and change in the vegetation cover and land degradation. The regions have been heavily affected by the severe droughts in the 1970s and 1980s and are likely to experience droughts in the future. Secondly, the two selected study regions are relatively poor rural areas where the majority of the people depend on an agricultural activity as main source of income. The effects of environmental stressors were presumed to be particularly high and visible in areas, where people highly depend on the natural environment. Thirdly, both study areas show a high population mobility with a negative net migration balance, meaning that the number of people who depart from the regions is higher than those of the arriving people.

Figure 8: The study regions: Linguère in Senegal and Bandiagara in Mali.



Source: Hummel et al. 2012: 6.

The suitability of the pre-selected areas for the purpose of the micle-project and this doctoral study had been controlled in the first explorative field phase (Lamnek, Krell 2010). Moreover, on-site local experts were consulted to identify the most appropriate communities for the fieldwork, including “typical” and “deviant” cases (Strauss, Corbin 1991; Bryman 2012).

By selecting two study areas in Mali and in Senegal, this study pursues a comparative approach. Most case studies on the environment-migration dynamics do not compare different locations but rather focus on one specific study area, which can be a village, a specific community or one country. De Haan and Zoomers (2005) for example, had called for more emphasis on comparative livelihood research to recognize patterns that go beyond specific cases (de Haan, Zoomers 2005). Comparative approaches on the environment-migration nexus are rare and are often stretched over several continents, as in the EachFor-project as well as its follow-up project “Where the rainfalls”. These projects compare different study regions all over the world and have been criticised for using the same questionnaires for different cultural and economic contexts.

This doctoral study in contrast is a comparative study at a local level in two study areas which are located in the same geographical region - the West African Sahel - with similar climate and environmental conditions, but with local differences. The advantage of a comparative study is that it identifies similarities and differences between the two areas which allows us to generate generalizations of the results for the West African Sahel region and hint at cultural or local differences (Strauss, Corbin 2010).

Although the cultural backgrounds are different due to the location in different countries and the different ethnicities of the interviewees, they are presumably not as different when compared to communities on another continent or in a different geographical region. The cultural proximity - although not similar - between the study areas on the one hand justify using the same survey questionnaire in both study areas and on the other hand permit the detection of local differences and regional similarities with respect to migration (de Bruijn, van Dijk 2004).

Differences between the two study areas that are considered as relevant for the purpose of this study also relate to differences on the national level of the two countries. Main differences relate for instance to the different status of development of Senegal and Mali and their different migration history. The development status of Senegal is considered higher by the international community than that of Mali, which might influence the migration behaviour. Moreover, Senegal has historically been an immigration country which

turned into an emigration country in the 1980s and has a high share of emigrants who move to European countries. Mali in contrast is traditionally an emigration country whose emigration is rather directed to neighbouring African countries. However, the biggest share of migrants of both countries move within the country, mainly from rural to urban areas. Seasonal or circular migration has a strong tradition in the rural areas of Senegal and Mali and is often stated as a (coping) strategy for rural households to diversify and secure income (de Haan, Zoomers 2005).

Migration from rural areas in both countries, particularly with an increase of migration flows since the 1970s, has often been linked to environmental conditions and economic development and has been assumed to be an adaptive response to the droughts (Scheffran et al. 2012; Bleibaum 2009). There exist only few studies, and predominantly natural scientific studies, on the selected Senegalese study area, also known as the Ferlo. In contrast, the Malian study area, also known as the Dogon country, and its people, the Dogon, have been subject to several social scientific studies (e.g. Palau Marti 1957; Calame-Gri-aule 1965; Krings 1992; Findley 1994; Diawara 1997; David 1995; Petit 1997; van Dijk et al. 2004; Dougnon 2007; Mansfeld 2007; Sieveking, Fauser 2009; Hertrich, Lesclingand 2012; Sauvain-Dugerdil 2013). The following sections will describe the climate change, livelihood and migration context in the Sahel and the specific situation of the two study areas.

4.2 The regional context: Climate change, livelihoods and migration in the West African Sahel

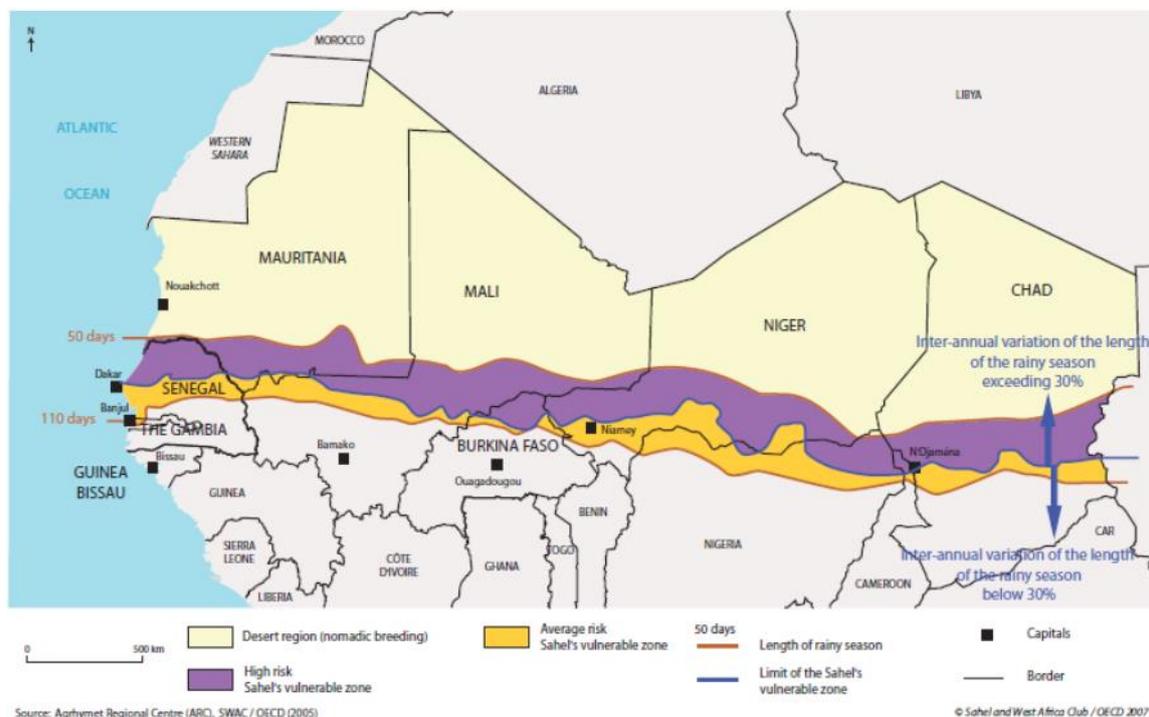
Climate change and livelihoods in the West African Sahel

The Sahel region of West Africa is one of the poorest regions in the world and is characterized by high rainfall variability and rapid population growth (Cline-Cole 2005; Mertz et al. 2011). The Sahel is defined as the semiarid area with an annual average precipitation between the 200 and 600 mm, stretching from the West to the East of the African continent through the following countries: Senegal, Mauritania, Mali, Burkina Faso, Niger, and Chad²⁸ (OECD 2009). It is bordered by the Sahara desert in the North and the Savannah in the South. The Sahel is home to an estimated number of 8 million people, which

²⁸ Some studies also consider The Gambia, Guinea-Bissau, and Cape Verde (Sissoko et al. 2011) or Northern Nigeria and Northern Cameroon, Sudan, Eritrea and Northern Ethiopia as part of the Sahel.

is only about 3% of West Africa's population, and has very few significant urban centres (OECD 2009).

Figure 9: The Sahel zone.



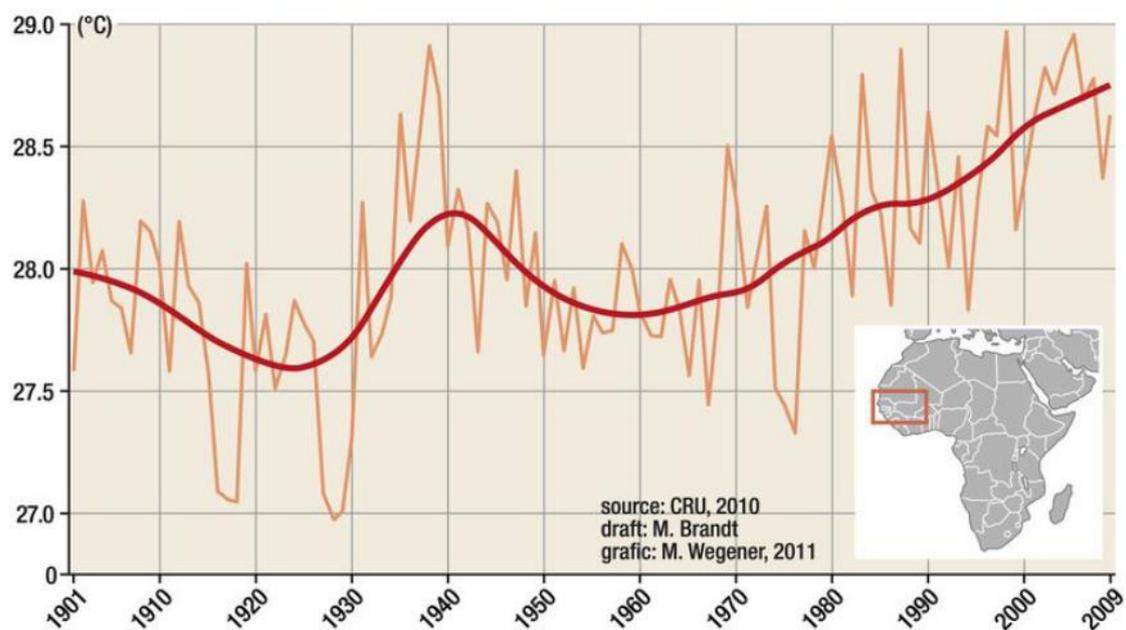
Source: OECD 2009: 275.

The West African Sahel has been identified by international organisations as one of the hotspot regions of climate and environmental change (IPCC 2007b; WBGU 2007; Brandt et al. 2013). The region is characterised by a high degree of spatial and temporal variability in precipitation, wind erosion, land degradation and drought (Mertz et al. 2010; Samimi, Brandt 2012). During the last century, four major droughts have occurred in the Sahel (1909-13, 1940-44, 1969-73 and 1983-85) which had devastating effects on the natural environment, livestock and people (OECD 2009). Particularly, the severe droughts of the 1970s and 1980s have attracted special interest of the international community in the Sahel region (Hammer 2004; IPCC 2007b; Brandt et al. 2013; IPCC 2013). The fourth IPCC report notes that “the decreasing rainfall and devastating droughts in the Sahel region during the last three decades of the 20th century are among the largest climate changes anywhere” (IPCC 2007b: 299).

From the 1950s until the late 1980s rainfall across the Sahel decreased substantially but has been partially recovering since the 1990s. Although rainfall and vegetation have been partly recovering - which is often described as the “greening of the Sahel” - rainfall and biodiversity have not returned to the levels before the 1950s (Dai et al. 2004; Olsson et al. 2005; IPCC 2007b; Brandt et al. 2014b). The high variability of the rainfalls is a major

risk factor in the region. The variability of the rainfall has not only become more frequent and extreme since the late 1980s (Dai et al. 2004; Olsson et al. 2014), but are also presumed to increase in the future (Samimi, Brandt 2012). While the rainfall variations had been previously explained by land use changes, today it is commonly agreed that they result from changes in sea surface temperatures, and thus are caused by global warming (IPCC 2007b; Samimi, Brandt 2012). Natural scientists have proved that the temperature has increased in the region and that it is very likely to increase in the future. However, the predictions for the development of the rainfall remains uncertain and thus it remains unclear whether the Sahel will be more or less wet in the future (IPCC 2007b, 2013). Nevertheless, it is often assumed to become drier due to the rise in temperature.

Figure 10: Average annual temperature in the West African Sahel (1901-2009).



Source: Brandt et al. 2014a: 53.

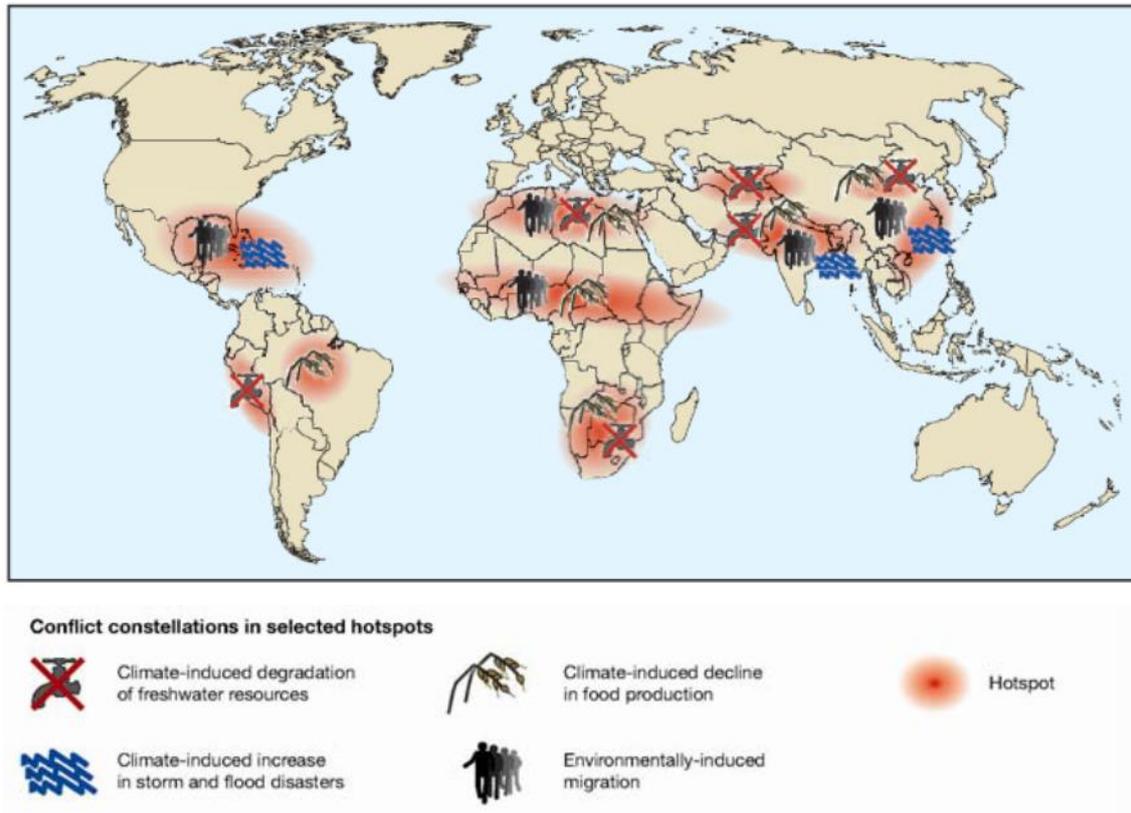
The increasing interest in the Sahel and the identification of the region as a climate change hotspot by natural scientists and international organisation resulted also in an increasing international interest in the social consequences of climate and environmental change in the region. Several organisations identified the Sahel as one of the main regions at risk of drought which could cause major damages to dryland agricultural systems, high mortality and economic loss as well as lead to security issues, such as civil war and environmental refugees (Dilley et al. 2005; UNDP 2007; WBGU 2007; Adamo 2008). Today the impact of climate change and climate variability on human populations is a major concern in the West African Sahel because the economies and the majority of the people highly depend

on agricultural production and rapid population growth puts additional pressure on the natural resources (Cline-Cole 2005; Mertz et al. 2011).

The West African Sahel is an agricultural-pastoral zone in which most people, particularly those with low and middle incomes, depend on subsistence and smallholder farming or livestock breeding (OECD 2009; Sissoko et al. 2011). Less rainfall, more variable precipitation, higher temperatures, locus invasions and increasing land degradation, caused by intensification of cropping, deforestation and overgrazing, threaten crop production and yield, and can lead to a decrease in food availability (Sissoko et al. 2011; Samimi, Brandt 2012). But the dominant environmental risk farmers and livestock keepers face in the Sahel is the highly variable rainfall - including the timing, length and adequacy of rain within and between years - during the rainy season between June and September (Mortimore, Adams 1999; Hammer 2005; Mertz et al. 2010; Sissoko et al. 2011; de Sherbinin et al. 2012). Sahelian countries are assumed to lose a high share of their agricultural capacity, i.e. the Senegal is expected to lose over 50 percent and Mali 30 to 40 percent (Cline 2007 cited in Leighton 2011: 331).

The WBGU report (2007) on the security risks of climate change identified the Sahel as a region particularly prone to environmental stress due to climate change which could cause a decrease in food production and could lead to environmental refugees (WBGU 2007) (see Figure 11). A fictional scenario for the year 2025 even forecasts that hundreds of thousands of refugees - particularly young men - could leave the Sahel and try to enter Europe in the middle of the 21st century as a response to a decrease agricultural productivity and food security caused by climate change. Poverty and population growth could additionally aggravate the situation (WBGU 2007).

Figure 11: Security risks provoked by climate change: selected hotspots.



Source: WBGU 2007: 4.

However, households in the Sahel have developed a range of strategies to cope with the difficult climatic situation, including the selling of animals and on-farm diversification or specialization (Dietz et al. 2004; Sissoko et al. 2011; USAID 2010). Migration constitutes one important response to the seasonality of rainfall and the harsh environmental conditions in the West African Sahel (Findley 1994; David 1995; Davies 1996; Ellis 2003).

Migration in the West African Sahel

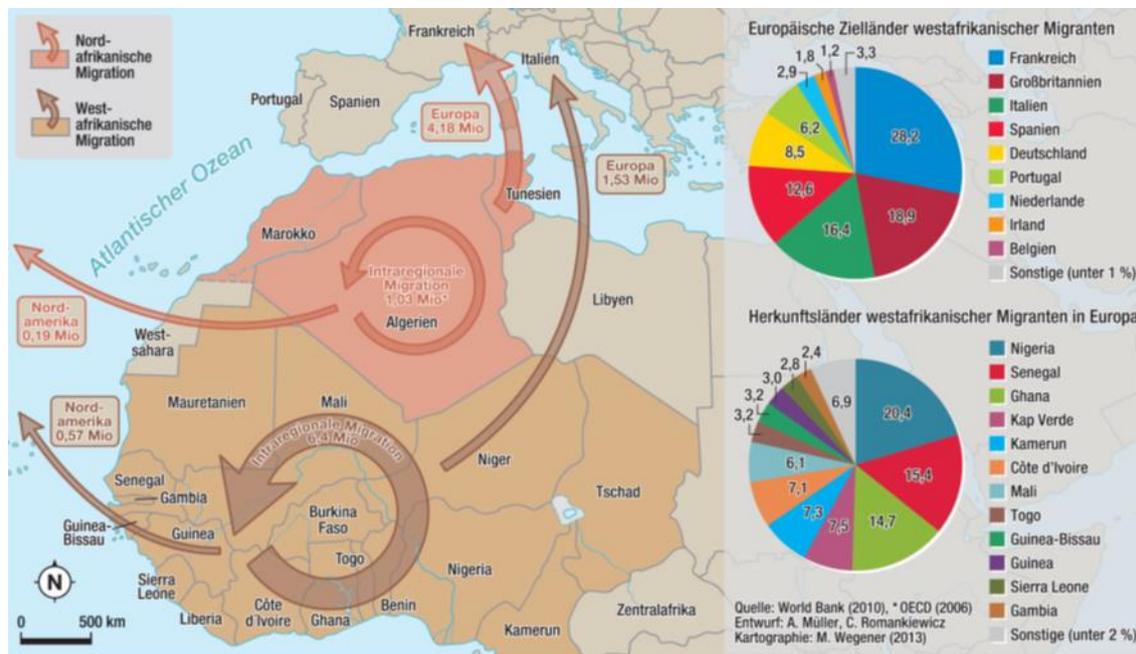
West Africa is the most mobile part of Africa (IOM 2014). West Africa and the Sahel in particular have a long tradition of population mobility - which was already common in pre-historic times - and represent a multitude of migration patterns and trajectories (de Haan 2000; Hummel et al. 2012). Today mobility in West Africa is dominated by internal and intraregional migration. Migration is often circular and linked to the seasonality of rainfall and thus to the environmental conditions and economic opportunities in the region (Cordell et al. 1996; Rain 1999; de Haan et al. 2002; Castles 2009).

In the Sahel, seasonal migration is on one hand often linked to the movement of Fulani pastoralists who - like other regional nomads and semi-nomads - move their cattle during the dry season to wetter areas in the south (Krings 1992; Ballo 2009; Hein et al. 2009). On the other hand it is linked to the seasonal labour migration of young men (and an

increasing number of women) from rural areas to economically important rural and urban areas during the dry season from October to May, when less work in agriculture at home remains to be done (Rain 1999; Findley 2004; OECD 2009). Migration from the rural areas in the Sahel is often explained through narratives in which rural inhabitants migrate in response to negative (push) factors such as environmental change, population growth or increasing economic pressure and the lack of opportunities at home (de Haan et al. 2002). However, positive (pull) factors, like the demand for labour forces in economic centres have also influenced migration behaviour (de Haan et al. 2002). Thus, interrelated economic and environmental factors are acknowledged as the main drivers of migration in the Sahel.

Most of the West African migrants who cross national borders are migrating intraregionally within West Africa (70%) (IOM 2014; Ndaye, Robin 2010). Only a small percentage migrate to European countries (15%) or to the US (5%) (Romankiewicz 2012) (see Figure 12). The share of West Africans among the migrants entering Europe is thus very small (Eurostat 2014).

Figure 12: Intraregional and international migration from West Africa and North Africa.



Source: Mueller, Romankiewicz 2013: 13.

The dominant intraregional mobility pattern in West Africa was and still is a North-South movement from the Sahelian landlocked countries of Niger, Burkina Faso and Mali to the more prosperous agricultural as well as urbanized zones generally located in the South or coastal states, such as Côte d'Ivoire, Liberia, Ghana, Nigeria, and to Senegal and The

Gambia in the West (Bakewell, de Haas 2007; Doevenspeck 2012). After independence in the 1960s, the economic development, infrastructure works, a growing transportation network and the increasing demand for labour as well as the increasing need for cash influenced the labour migration to rural and urban areas, often along the coast (Raynaut 2001; Hahn 2004; Bakewell, de Haas 2007; OECD 2009)²⁹. Large numbers of migrants from the Sahel and other West African countries were attracted by labour opportunities on cocoa and coffee plantations and in the economic centres of Ghana and Côte d'Ivoire, in the groundnut basin in Senegal and in Nigeria's petroleum economy (Adepoju 2005; Bakewell, de Haas 2007; OECD 2009). However, the economic and political crises in Ghana (1966) and in Senegal (mid 1970s) as well as the oil crisis in Nigeria (1973), resulted in the Côte d'Ivoire as the remaining main migration pole for migrants during the 1980s and early 1990s (Bakewell, de Haas 2007; Doevenspeck 2012).

Liberal immigration policies and the formation of the Economic Community of West African States (ECOWAS) in 1975 additionally supported migration in West Africa (Adepoju 1995, 2005; Raynaut 2001). The general worsening of the political and economic situation in West Africa over the 1980s and civil wars in Sierra Leone (1991-2001), Liberia (1989-1996 and 1999-2003), Guinea (1999-2000) and Côte d'Ivoire (2002-2007 and 2010-2011) changed West African migration patterns again (Bakewell, de Haas 2007; Doevenspeck 2012). New destinations, such as Gabon, Libya, Botswana and South Africa as well as other Maghreb states and the EU increasingly attracted migrants from the region (Bakewell, de Haas 2007; Doevenspeck 2012). However, the civil war in Libya in 2011, the revolts of the Arab Spring in the Maghreb states since the end of 2010 and the crisis in Mali since 2012 may have changed the migration destinations again.

4.3 The characterisation of the two study areas in the West African Sahel:

Linguère in Senegal and Bandiagara in Mali

4.3.1 Linguère in Senegal³⁰: Environment, livelihoods and migration

Senegal is considered a middle-income country (The World Bank 2010) and ranked 154th of 188 countries in the UNDP Human Development Index (HDI) (UNDP 2013). The

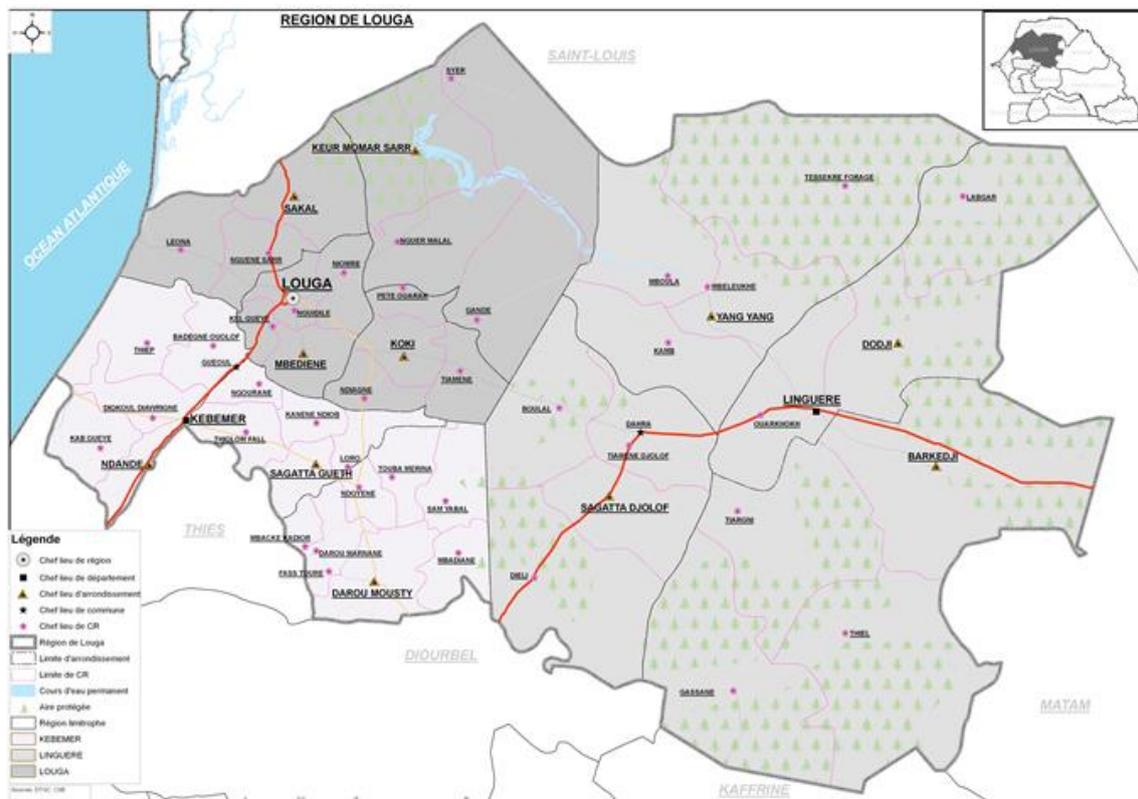
²⁹ For more detailed information see Bakewell, de Haas 2007, OECD 2009 and Doevenspeck 2012.

³⁰ This section is based on van der Land, Fourier 2012.

population growth at a rate of 2.5% per annum leads to a change in the population structure with a rising share of young people in the country (ANSD 2014; Index Mundi 2014). Since 1950 Senegal's population has increased from 2.4 million to 13.6 million in 2014. Almost half of the people (43%) live in cities and the annual urban population growth rate for the period 2010-2015 is estimated at 3.3% (Index Mundi 2014). The population density in Senegal is 64 people per km² (2009) (The World Bank 2010). Islam is the religion of about 90% of the population (The World Bank 2010) and polygamous marriage with up to four women is still common in rural areas.

The illiteracy rate is high with about half of the population being illiterate, with 34% among men and 60% among women (ANSD 2010, 2013). However, education policies during the last decades resulted in a primary school net enrolment of almost 80% (UNICEF 2014b). Agriculture is the main driver of the Senegalese economy as it employs up to 75 percent of the population (Ndiaye 2007). Senegal is home to about 20 different ethnicities with the Wolof (43%) and the Fulbe (24%), also known as Peulh, forming the majority of the population.

Figure 13: Map of the administrative region of Louga in Senegal.



Source: www.ansd.sn.

The study area around Linguère is also known as the “Ferlo”, named after the seasonal Ferlo River. The department of Linguère is one of three departments in the administrative

region of Louga in the northwest of the country (see Figure 13).³¹ In 2010, the department of Linguère had an estimated population of 238,087; of which 81% were considered as rural population. The population density is only 15.5 people per km² compared to an average of 34.5 people in Louga and 64 in Senegal (ANSD 2010). At 2.7%, the population growth rate for the region of Louga is a bit higher than the national population growth rate and might be even a bit higher than the department of Linguère (ANSD 2010).

The region of Louga includes several of the poorest communities in the country where access to basic social services is very limited. In the region of Linguère which is one of the poorest areas in the country only 30% of the population has access to basic social services (ANSD 2010). About 27% of the population in Louga lives in poverty and at 36%, the alphabetisation rate is much lower than on a national level (ANSD 2011), but the gross school enrolment in the region of Louga is 74% and equally distributed between boys and girls (ANSD 2010). The region of Louga is characterised by a liberal Islam, with a relatively high rate of polygamous relationships at 44% in 2002 (ANSD 2006).

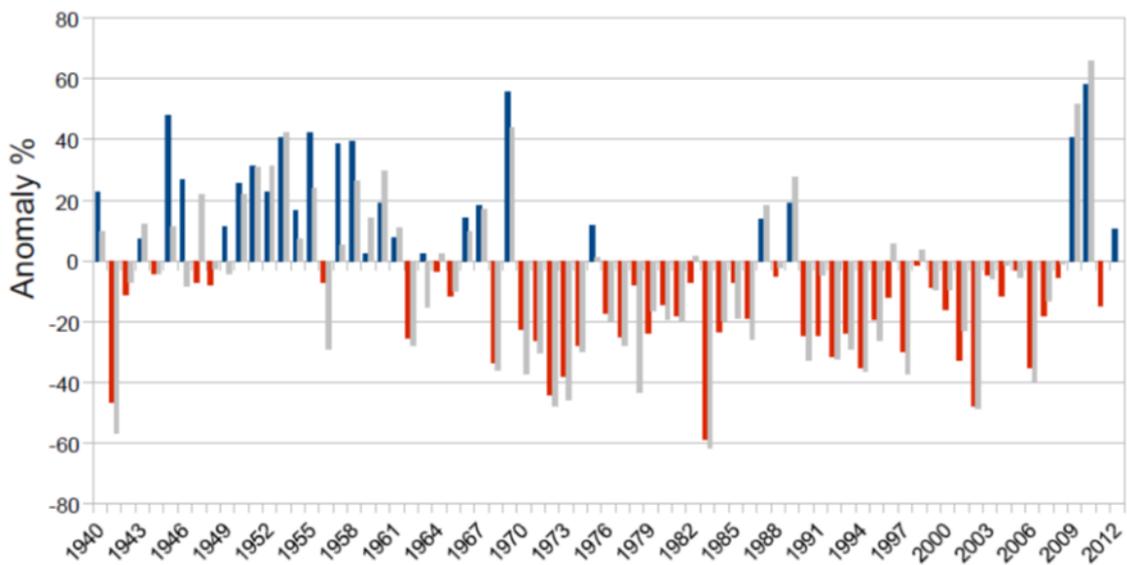
The local economy strongly depends on agricultural activities and livestock breeding - agriculture (crop production and livestock breeding) is the main economic activity for 80% of the population (ANSD 2010). The region is a silvo-pastoral zone, inhabited by semi-nomadic Fulani pastoralists, but also by farmers who mainly belong to the ethnicity of the Wolof (ANSD 2010). The Fulani (49%) and Wolof (42%) constitute the largest ethnic groups in the department of Linguère, thus the proportion of the Fulani is higher than on a national average. Linguère is the department with the highest share of livestock (48%), mostly cattle, sheep and goats in the region of Louga and the most widely grown agricultural products are millet, groundnuts and cowpea (ANSD 2007, 2010; Hein et al. 2009).

Agriculture in the region heavily depends on the rainy season between July and September. The mean annual precipitation around Linguère is 400 mm which mainly occurs during the rainy season, but inter- and intra-annual rainfall is extremely variable (see Figure 14). Even though the research area is relatively small with about 50 x 50 km, the mean annual rainfall is 60 mm higher in the southern part, where farming constitutes the main

³¹ There is only very little statistical data available on the sub-region of Linguère, thus the information primarily refers to the administrative region of Louga. However, there are certainly regional differences within the administrative region of Louga. The sub-region around Linguère is considered as particularly rural and poor compared to other parts of the Louga region (ANSD 2010). Although, there has been a population census in Senegal in 2013, the results were not yet published by the time I submitted this thesis. The available publications thus often date back several years.

activity, than in the northern part where livestock breeding is more common (Brandt et al. 2014a; OECD 2009).

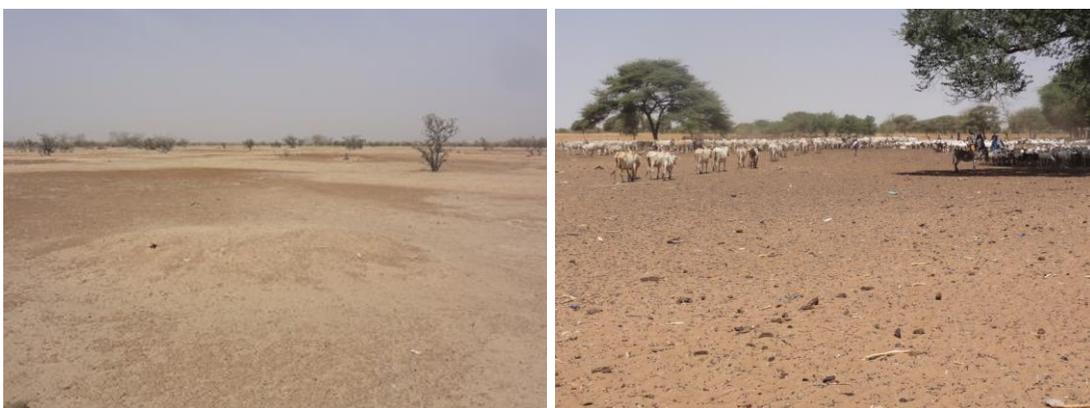
Figure 14: Average annual rainfall Linguère (GPCC/TRMM 1940-2012).



Source: Brandt et al. 2014b: 2417.

The natural vegetation consists of dry grassland with scattered trees and bushes and with low vegetation diversity (Hein et al. 2009; Brandt et al. 2014a). The droughts of the 1970s and the 1980s have caused considerable damage in the region resulting in a low vegetation diversity, dominated by a few robust and drought-resistant species, and a remarkable reduction in tree density (Brandt et al. 2014a). Although the increasing rainfall during the past ten years led to a partial recovery of the vegetation, deforestation and degradation are apparent, particularly near wells and villages (Brandt et al. 2014b) (see Picture 1 and Picture 2).

Picture 1 and Picture 2: Degraded areas around Linguère/Senegal during the dry season.



Source: Martin Brandt.

Migration is very common in Senegalese society: about 70% of all Senegalese households include at least one migrant family member (Fall 1998; MEF 2004). Internal migration still counts for the biggest part of movements in Senegal, which are mainly directed from rural to urban areas (Fall 1998; ANSD 2009; Hitimana et al. 2011; Guèye et al. 2007). The main domestic destinations are Dakar and the urban centres of Diourbel and Thiès (ANSD 2013, 2006). Internal migrants are mainly 15 to 29 years old (34%) and mostly female (60%) (ANSD 2013).

Historically, Senegal was mainly considered an immigration country for other Africans but turned into an emigration country in the early 1980s and into a transit country for migrations to the Maghreb and European countries (Adepoju 2005; Some 2009; Di Bartolomeo et al. 2010; Fall et al. 2010). In the beginning the increase of international migration was assumed to be a reaction to difficult living conditions caused by the severe droughts and financial crisis and later it became a model for social rise and a result of the success stories of earlier Senegalese emigrants (Fall 2003; Gerdes 2007; Bleibaum 2009). While Senegalese emigration in the past has primarily been migration to other African countries, economic political instabilities in the neighbouring countries in the 1990s led to a change towards intercontinental migration, with Europe as the main destination (MEF 2004).

Today, more than one third of the Senegalese emigrants move to countries to the “North”, mostly to Europe with France, Italy and Spain as the main destinations (MEF 2004; Di Bartolomeo et al. 2010; Scheffran et al. 2012). Migration within the African continent is predominantly directed to the Cote d’Ivoire, The Gambia and the Maghreb countries (The World Bank 2010). Emigrants are mainly male (84%), younger than 35 years old (72%) and single (47%) (MEF 2004). Remittances from the emigration are an important source of income in Senegal: they have tripled during the last 10 years, reaching US\$ 1.6 billion in 2013. Remittances are mainly sent from the ‘North’ (70%) and are higher than the country’s Official Development Assistance (ODA) and the amount of Foreign Direct Investment inflows (FDI) (The World Bank 2010)³².

The Louga region is characterized by high population mobility (nomadism and transhumance of the Fulani, internal and international migration) and is one of the regions in Senegal with the highest out-migration rate (ANSD 2006, 2010). Internal migration from

³² In 2013, remittances in Senegal represented 11.4% of the GDP (The World Bank 2010, 2014). The Official Development Assistance (ODA) was US\$ 1 bn in 2012 and the Foreign Direct Investment inflows (FDI) were US\$ 0.7 bn in 2008 (The World Bank 2010: 172).

Louga benefits all regions of Senegal, especially urban areas like Diourbel, Dakar and Thiès (ANSD 2006, 2007). Rural exodus is primarily motivated by lack of employment due to a weak regional economy and poor infrastructure (ANSD 2010). Development projects have been implemented in the Louga region aiming at reducing (e)migration, however, the effects remain unclear (ANSD 2007).

4.3.2 Bandiagara in Mali: Environment, livelihoods and migration

Mali is one of the poorest countries in the world (a low-income country) and is ranked 182th of 188 countries in the UNDP Human Development Index (HDI) (UNDP 2013; The World Bank 2010). Since 1950 Mali's population has grown from 4.3 million to 16.4 million with a population growth of 3% which results in a rising share of young people in the country (The World Bank 2013; Index Mundi 2014). The majority of the people lives in rural areas (65% in 2011) but with a high rate of urbanization of almost 5% (2010-15 est.) (Index Mundi 2014). The population density is 11 people per km² (2009) but about 90% of the population lives in the southern part while the northern part in the Sahara is almost deserted (The World Bank 2010). Islam is the religion of about 90% of the population (The World Bank 2010) and polygamous marriage with up to four wives is still common in rural areas. The illiteracy rate is very high at 67% (2008-2012) (UNICEF 2014a). Primary school net enrolment is less than 70% (UNICEF 2014a). In contrast to Senegal, Mali is a landlocked country and 80% of the population is dependent on agriculture (USAID 2014).

The study area around Bandiagara is located in the administrative region of Mopti³³ in the centre of Mali (see Figure 15). The region of Mopti had 2,705,000 million inhabitants in 2013 (INSTAT 2014a) and about 313,456 inhabitants lived in the administrative cercle of Bandiagara in 2009 (INSTAT 2011). The main economic activities are rainfed agriculture with millet, groundnut and sorghum as the main crops and irrigated vegetable gardening, mainly shallots and to a lesser degree garlic and tomatoes (USAID 2010). The dependency on the natural environment is high: 86% of the active people in the region of Mopti work in the primary sector, but half of the active people from the Mopti region state have several economic activities, which is one of the highest percentages in the country (INSTAT 2014b).

³³ There is only very little statistical data available on the sub-region of Bandiagara, thus the information primarily refers to the administrative region of Mopti. However, there are differences within the region of Mopti. The sub-region around Bandiagara is considered as particularly rural and poor compared to other parts of the Mopti region.

Figure 15: Map of the administrative region of Mopti.



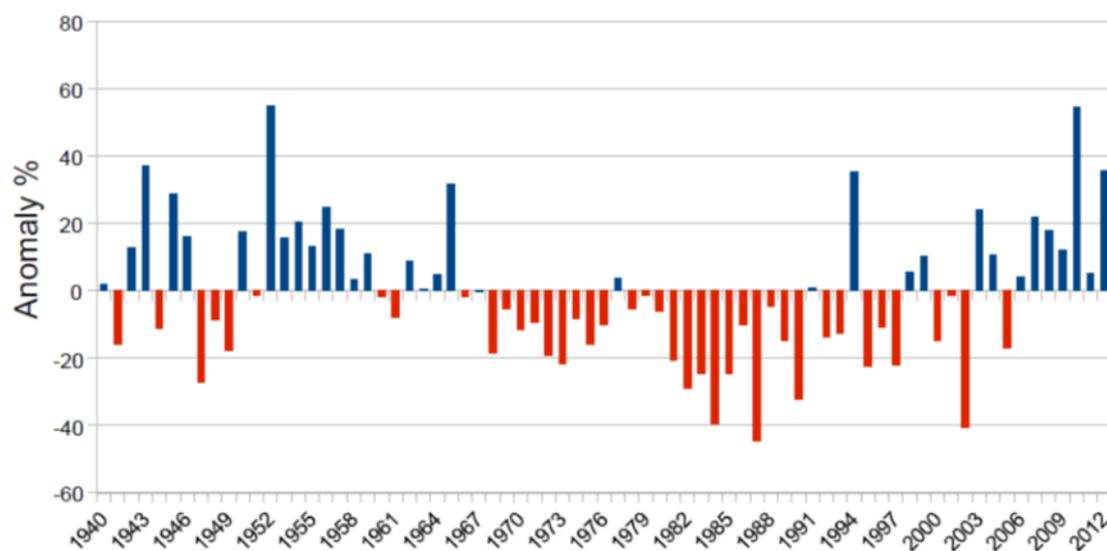
Source: www.unocha.org/mali/maps-graphics/latest-maps, modified by author.

In addition, external aid is relatively common in the area - provided by international organisations, development aid organisations or NGOs. Interventions range from distributing seeds to building small dams and infrastructure (USAID 2010). The area is mainly inhabited by Dogon farmers and to a much lesser extent by livestock herding Fulani pastoralists. Mali is home to several ethnic groups of which the main groups are the Mandé (50%) which include the Bambara, Malinke and Soninke, and the Peulh (27%). The Dogon account only for 5% of the population are mainly located in the Dogon country, which is located near the city of Bandiagara in the Mopti region. The scholarisation of boys and girls on a primary level in the Mopti region is, at 35%, the lowest in the country; on a national level it was 54% in 2013 (INSTAT 2014a). The higher the education level, the less likely it is people on a national level will work in the primary level: 73% of people with no education work in agriculture, while this applies to only 6% of people with a university education (INSTAT 2014a). In 2013, 24% of the population surveyed in the region of Mopti considered themselves as being in a difficult living situation (subjective poverty), which is more or less equal to the national average (INSTAT 2014a).

Food security is a major risk in the area, more than half of the households in the Mopti region had difficulty nourishing their family in the twelve months prior to the survey

(INSTAT 2013). The main strategies to cope with food insecurity mentioned by the people in the Mopti region are being supported by kin or a friend (30%), taking out a loan (25%), selling livestock (25%) or migration of a household member (18%) (INSTAT 2013). Other main problems in the region perceived by the people in Mopti in 2011 are related to poor infrastructure, such as the access to electricity (only 8% of the households have access to electricity), education, health services and fresh water (INSTAT 2012a, 2013). The region of Mopti is characterised by a liberal Islam, and 40% percent of marriages are polygamous in the rural areas compared to 17% in urban areas (INSTAT 2013). The study area is located approximately 50 km south of the city of Mopti and it is geographically divided into the “Dogon Plateau” around Bandiagara, and the “Séno Plain” around Bankass which stretches southwards from Bandiagara. The study area is characterised by an average annual rainfall of around 500 mm (1950-2010) which mainly falls between June and October and a considerable inter- and intra-annual variability (Brandt et al. 2014a).

Figure 16: Average annual rainfall Bandiagara (GPCC/TRMM 1940-2012).



Source: Brandt et al. 2014b: 2417.

The soils on the plateau between the towns Sevaré and Bandiagara are sandy, lateritic and in places with rocky sandstones (Romankiewicz 2012). Around 10% of the rocky and ferruginous plateau are not suitable for agriculture, while most of the remaining portion is used for rainfed cropping and livestock herding (Brandt et al. 2014a). The seno plain sands are deep and infertile but more than 90% of the whole area is used for rotational cropping (Romankiewicz 2012). The area is characterised by a loss of vegetation and

biodiversity: before the droughts 40% of the land had been covered by dense brushland and woody vegetation, today only 25% is brushland (Brandt et al. 2013).

During the past 50 years, droughts and soil erosion as well as population growth, human expansion and increasing resource use resulted in an increase of cultivated areas and in overexploitation and land degradation as well as in the loss of vegetation cover and biodiversity in the region (MEA 2009; Brandt et al. 2014a) (see Picture 3 and Picture 4). However, there is also a positive greening trend noticed in the region formed by a few robust species due to increasing rainfall during the last decade as well as due to protection measures and forestation by the people and the government (Brandt et al. 2013).

Picture 3 and Picture 4: Degraded areas around Bandiagara/Mali during the dry season.



Source: Martin Brandt.

Migration is very common in Mali, about 57% of the households had at least one household member in migration (WFP et al. 2006). Internal migration counts for the biggest part of the movements in the country (58%) and takes place mainly from rural to urban areas (INSTAT 2012b). Main destinations in the country are Bamako with 53% of the internal destinations as well as destinations like the Ségou region - with the Office du Niger (a large irrigation scheme) - and the city and region of Sikasso, which is characterized by very favourable conditions for rain-fed agriculture (Bocquier, Diarra 1999; Ballo 2009). Migration of women is a relatively new phenomenon and accounts already for 56% of all migration flows (Ballo 2009; Sieveking, Fauser 2009). However, female migration is largely internal migration from rural to urban areas, whereas international migration is still mainly restricted to men (Sieveking, Fauser 2009; Romankiewicz 2012). In contrast to Senegal, Mali has traditionally been one of West Africa's typical emigration countries and is an important transit country for West Africans migrating to North Africa and/or to European countries (Ballo 2009). Today 42% of the migrants leave the country

(INSTAT 2012a), mostly to other African countries (84%) (Romankiewicz 2012). The Cote d'Ivoire (particularly Abidjan) is the main destination for 32% of the emigrants, followed by other African destinations (2009) (INSTAT 2012a). Emigration outside the continent has increased and migration to European countries, mainly to France and Italy, accounts today for 20% of the emigrations (INSTAT 2012a). Remittances are very important for Mali's economy, although they are (still) not as high as in Senegal. The Malian emigrants remitted an estimated US\$ 842 million in 2013, a number that has quintupled during the last 10 years³⁴. The amount has been mainly remitted (67%) from countries from the "South" and although it was not higher than the Overseas Development Assistance (ODA), it has been higher than the Foreign Direct Investment (FDI) (The World Bank 2010, 2014).

The Dogon and Fulani are the main ethnicities living in the study areas which are both very mobile. The emigration rate from the region of Mopti has been and still is one of the highest in the country (Bocquier, Diarra 1999, INSTAT 2012b, 2012a). In 2011, almost 37% of the surveyed households in the Mopti region stated that at least one household member lives and works outside the respective location (INSTAT 2012a). According to the national household survey, migration from the Mopti region is dominated by men (86%) (INSTAT 2012a), while the percentage of female migrants is very low at 14%. People from the Mopti region mainly migrate to destinations within the country (68%) rather than outside the country (32%) compared to 42% on a national level - according to the actual residents during the survey (INSTAT 2012a). However, Mopti is the region from where most people have spent more than six months living abroad with (8% compared to 5% average on a national level) (INSTAT 2014a), which suggests that many people migrate circularly and only for a short term. Main destinations for the migrants from the Mopti region are Bamako (48%) and the city of Mopti (31%). The Cote d'Ivoire is the main destination outside the country for 55% of the migrants (INSTAT 2012a). Only 9% of the people from the Mopti region lived in Europe (INSTAT 2012a, 2014a). This suggests that migration usually includes several destinations and is not only directed to one destination. Although migrants from the Mopti region often emigrate, remittances account only for 6 % of the total remittances sent to Mali (INSTAT 2012a).

³⁴ In 2013, the remittances in Mali represented 7.6% of the GDP (The World Bank 2014). The Official Development Assistance (ODA) was US\$ 1 bn in 2012 and the Foreign Direct Investment inflows (FDI) were US\$ 0.1 bn in 2008 (The World Bank 2010: 172).

5 Mixed methods: A qualitative and quantitative perspective

5.1 Overview of the research process

The studies on the relationship between the environment and migration use a broad variety of methods, including different qualitative and quantitative methods, a mix of both, qualitative and quantitative methods, or models for future scenarios (Piguet 2010). Each of the methods used in the case studies has its own strengths and limitations. However, due to the variety of methods applied and the absences of standard indicators, it is extremely difficult to compare the results of different studies.

This dissertation is an empirical study, which combines quantitative and qualitative data for the analysis of the linkages between the environment and migration. The research process included the following different stages: (1) literature review, (2) formulation of research questions and working hypotheses, (3) selection of the rural study areas: Bandiagara in Mali and Linguère in Senegal, (4) explorative fieldwork in both countries, (5) revision of the research questions and hypotheses, (6) main fieldwork, including qualitative and quantitative data collection, and (7) data analysis. Although these different stages of research took place in the respective order, the research process should not be misunderstood as a linear process but several stages have been repeated during the process, i.e. the literature has been consulted over and over and the research questions and hypotheses have been adapted and focussed throughout the research process.

The fieldwork included an explorative phase from February to April 2011 and a main field phase from January to April 2012 in Mali and in Senegal:

- The explorative phase included qualitative interviews and participant observation as applied methods in the two rural study areas, and was designed to prepare for the main field work in 2012. The aim of this research phase was to gain regional competences and to improve the understanding of the local research context, such as for regional cultural characteristics and social norms of the societies which was crucial for the success of the main research phase (Kruse et al. 2012). This seemed particularly important in order to be able to judge whether and under which perquisites the data is reliable and valid (Jónsson 2010). The author conducted qualitative interviews during this phase which served to develop the survey questions and adequate response categories (Roth, Heidenreich 1995). In addition, the explorative phase was intended to identify key persons which would facilitated the quantitative and qualitative data collection during the later main research phase.

-
- During the main field work, a standardised survey and qualitative interviews were conducted with villagers in both rural study areas and with migrants from these areas in the capitals - Bamako and Dakar. Both, quantitative and qualitative research methods will be explained in detail in the following sections.

A mixed method approach, which combines both quantitative methods (as explaining research method) and qualitative methods (as a discovering research method) (Brüsemeister 2008; Raithel 2008; Kuckartz 2014), seemed the most appropriate to contribute to a better understanding on the environment-migration nexus. The advantages of a mixed approach are that qualitative data can make statistical relations more comprehensible and vivid by citations or pictures and can contribute to a better understanding by contextualising the statistical data. Statistical data in turn can contribute that qualitative data can be expressed in numbers and are more likely to be generalizable. A mixed method approach thus leads to a more embracing and detailed understanding of the knowledge and findings by combining different perspectives (Kuckartz 2014). It has therefore been suggested to be the most promising method to analyse the environment-migration nexus because it can overcome the limitations of single method approaches (Findlay, Li 1999; Bakewell 2010; Piguet 2010).

While the quantitative data describes the structure or the context of migration in the study areas, the qualitative data explains the agency involved in migration or the underlying personal motivations and abstract causal mechanisms of migration which may be undetectable in the quantitative data (Bakewell 2010; Silverman 2011). The qualitative interviews have been the basis for the development of the survey response items. Moreover, they completed the results of the quantitative analysis, either to support the survey results or and to help interpreting and explaining the relationships between different variables in the statistical analysis (Flick 2008). The combination of different data and methods allows the acquisition of data on different aspects and scales of the research phenomenon and to get reliable and valid results by comparing the data and seeing whether the data corroborate one another (Flick 2008; Silverman 2011).

In this thesis, the quantitative data aims to describe the livelihood situation and migration in the study areas in a quantitative dimension, as for example *how many* participants rely on agriculture as their main economic activity?, how many people have a migration experience and what are the main migration motives in the regions?. Moreover, they allow the detection of relationships between out-migration and individual characteristics as well

as the ability to analyse whose migration is primarily determined by environmental factors. In contrast, the qualitative interviews aim at analysing people's personal experiences and perception as well as their agency and aspirations related to migration, as for example *how* they experience migration and staying?, what are their personal reasons or motives to migrate or to stay?, how people perceive environmental changes and other livelihood stressors?, how environmental and/or social factors and individual motives influence the personal migration decision?, or *why* some people migrate and others stay in areas affected by environmental change?.

The participatory observation in the rural communities - as part of the qualitative research - aimed at analysing and understanding the research context, such as the local living conditions, infrastructure, social norms and customs, and the context of migration (Castles 2012). Moreover, the fieldwork constituted a good basis to assess the reliability and validity of the results (Flick 2008).

Most studies on the environment-migration nexus start by identifying the environmental livelihood stressors and then analyse the effects of these stressors on people's migration. This thesis, however, pursues a different approach by analysing the migration decision and motives in a more general way in order to identify the weight of environmental factors in the migration decision. In order to avoid a bias in the responses, people usually have not been asked directly in the standardised survey and in the case of the qualitative interviews, these questions - if at all - were only posed at the end of the interviews. Moreover, the empirical data focuses on the individual perspective in contrast to the household perspective, and includes migrants and non-migrants into the analysis and thus considers both people's reasons to migrate and to stay. In doing so this distinguishes this study from most other studies on the environment-migration nexus. By using the term "survey", this thesis will refer to the quantitative data, while it uses the term "interviews" for the qualitative interviews.

5.2 The quantitative method: The migration survey

The sampling: Who has been surveyed?

A standardised quantitative migration survey took place in March and April 2012 in Mali and in Senegal.³⁵ The migration survey included n=905 people and has been conducted with n=661 villagers in the two rural study areas of Bandiagara in Mali and Linguère in Senegal and with n=244 migrants from these areas in the two capitals, Bamako and Dakar. The survey is an individual survey, not a household survey, and included people with and without personal experience of migration. The target population has been defined as people, aged 18 years or older, who originate from the districts of Linguère in Senegal and of Bandiagara in Mali (or have grown up in the area). The sample size of a minimum of 400 people from each study area constituted a reasonable compromise between justifiable cost and reliable statistical conclusions about each area (Bilsborrow et al. 1984).

In Mali 445 people participated and in Senegal 460 people who all differ with respect to age, gender, ethnicity, level of education and migration experience (see Table 1). The ethnicities included depended on the location of the rural study areas: in Senegal the survey included Wolof (traditionally farmers), and sedentary Fulani (traditionally pastoralists); in Mali it was mainly the Dogon (traditional farmers) who participated in the study. However, the survey only included sedentary livestock breeders and no nomadic pastoralists, because their mobility motives and patterns were assumed to differ considerably from those of “sedentary” people.

³⁵ The survey has been part of the “micle”-project and has been conducted similarly in Mali and Senegal. The author of this thesis has been responsible for the survey conduction in Senegal, while a colleague of the micle-team took responsibility of the survey in Mali. Interviewer training and data collection in Mali and Senegal took place at the same time and in close cooperation and consultation. In the following, the author will describe her experience and the process of the survey in Senegal.

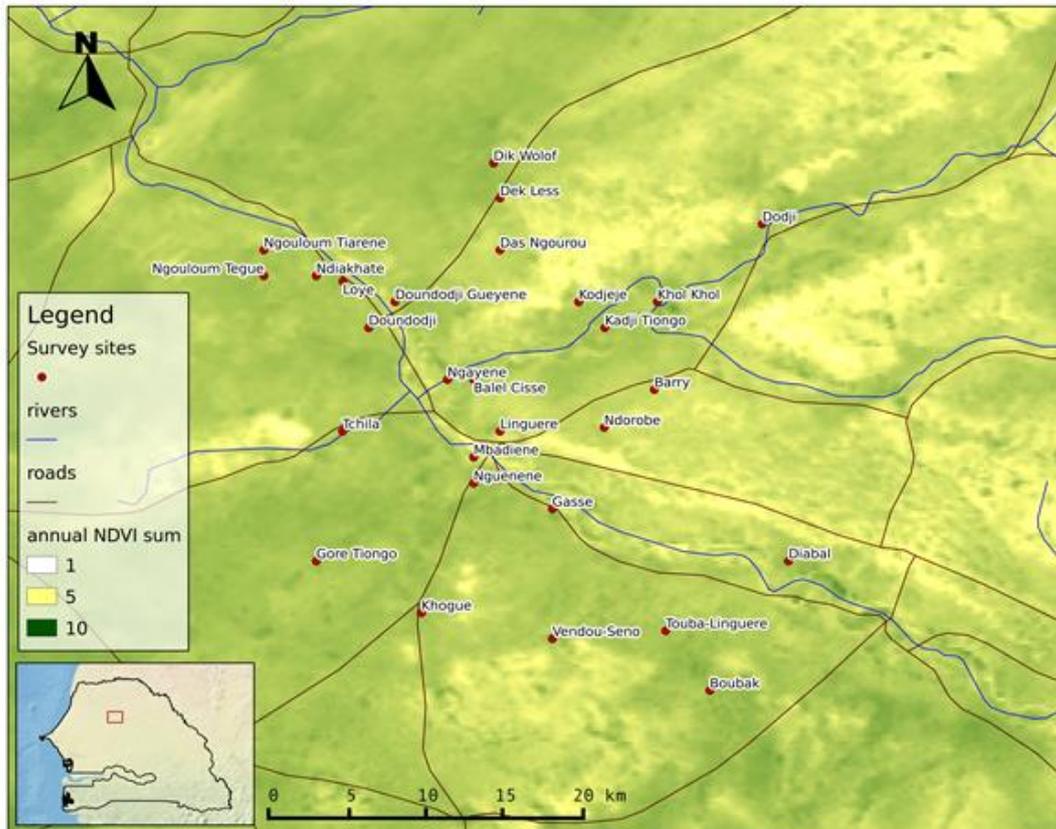
Table 1: Participants of the survey by survey location, gender, age, ethnicity, level of education and migration experience.

	Mali (n=445)		Senegal (n=460)		total (n=905)	
	n	%	n	%	n	%
survey location:						
rural study areas	324	36%	337	37%	661	73%
capitals	121	13%	123	14%	244	27%
gender:						
women	165	37%	208	45%	373	41%
men	280	63%	252	55%	532	59%
age:						
18 to 30-years old	156	36%	145	32%	301	33%
31 to 50-years old	178	40%	184	40%	362	40%
51 years and older	111	25%	131	29%	242	27%
ethnicity:						
Dogon	435	98%	-	-	435	48%
Fulani	8	2%	102	22%	110	12%
Wolof	-	-	354	77%	354	39%
level of education:						
no formal education	357	80%	334	73%	691	76%
primary education	55	12%	66	14%	121	13%
high level of education	33	7%	60	13%	93	10%
migration experience (only people from the rural areas):						
yes	277	86%	265	79%	542	82%
no	47	14%	72	21%	119	18%

Source: Author.

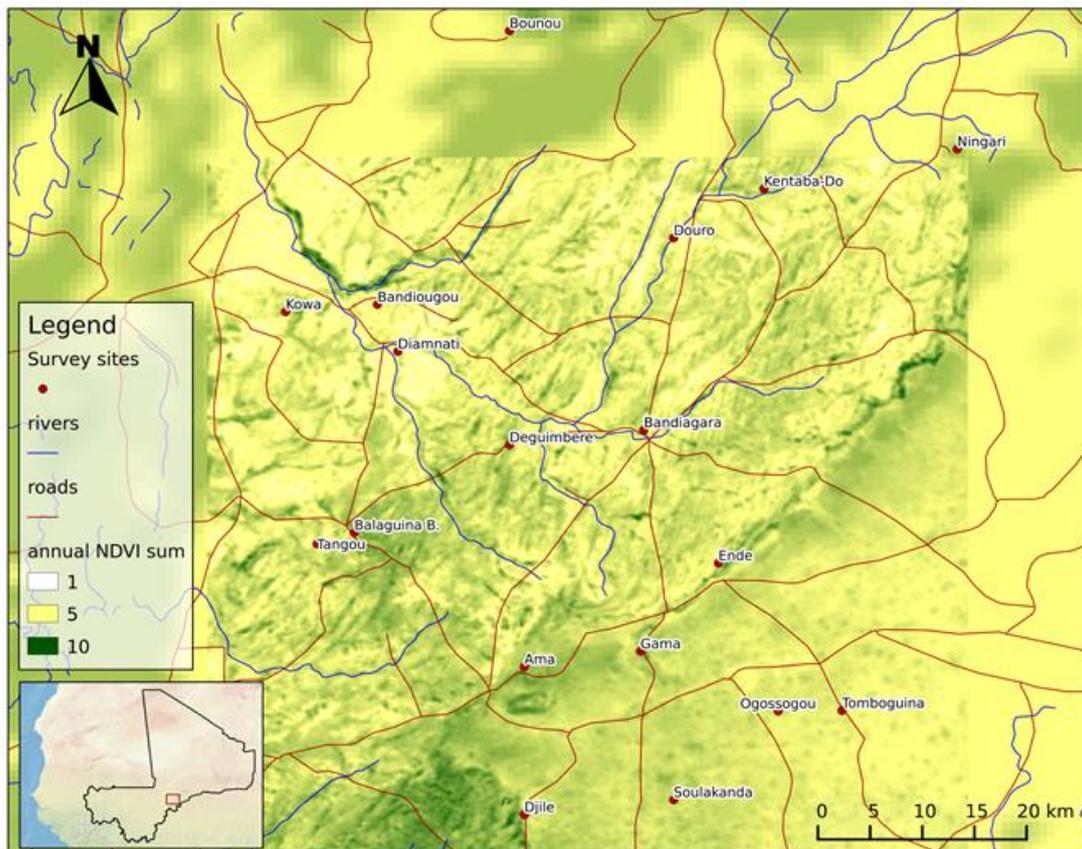
The survey has been conducted in most villages around Linguère and Bandiagara (see Figure 17 and Figure 18). The selection of the areas and the villages has been based on a “judgement sample”, meaning that they were considered as “typical” areas and villages for rural areas in the West African Sahel in which people heavily depend on the natural environment (Bilsborrow et al. 1984). Judgement sampling is standardly used for migration surveys, often because of limited objections or budget restraints, and are considered reasonable approach for descriptive migration studies (Bilsborrow et al. 1984).

Figure 17: Map of villages surveyed in Senegal.



Cartography: Lukas Drees.

Figure 18: Map of villages surveyed in Mali.



Cartography: Lukas Drees.

The villages were selected with the help of a local expert according to different criteria, such as their accessibility from the main streets, approximate number of inhabitants, infrastructure (schools, health care centres, access to water and electricity, etc.), ethnicity and related agricultural activity, as well as the geographical location and the quality of soils. A mix of villages with different characteristics should reflect a realistic picture of the study region.

The sampling of the survey participants is based on a “quota sample”, which is the most commonly used procedure for non-probability samples (Bilsborrow et al. 1984). This means that a fixed a priori number of elements is selected from the study area/s regardless their actual prevalence (Bilsborrow et al. 1984). The interviewers had to select the survey participants randomly by applying three defined age categories (18- to 30 years, 31- to 50 years, 51 years and older) which should include a similar percentage of people with an equal distribution of men and women in each age group. The quota was applied to avoid an unequal distribution of gender and age due to a high out-migration of young people during the dry period as well as to get different views on the research questions from people of all ages and both genders.

In the two capitals, the migrants from the rural study areas were identified using a snowball sampling method. This means that people in the rural study areas were asked for the contact details of household or family member in the cities. The contact persons in the cities on their part assisted in identifying further migrants from the two study areas (Diekmann 2005; Urry 1999).

The quantitative approach chosen may imply limitations and challenges that shall be discussed. The choice of sampling methods (quota and snowball sampling) could be argued to call the representativeness of the sample into question. However, given the particular circumstances in the cities to identify migrants from the rural study areas, the snowball sampling was the most effective method. The greatest weakness of the quota sampling is the non-random selection of the participants by the interviewer which can lead to a selection bias and questions the representativeness of the sample (Bilsborrow et al. 1984; Schnell et al. 1993). However, quota samples are considered useful under conditions where a random sample is difficult to realize due to a lack of a population frame (Bilsborrow et al. 1984; Schnell et al. 1993). This is the case in the study areas where the researchers were confronted with difficult conditions for the survey conduction. These conditions included for example no data or reliable information on the number of people or households in the villages (not all people are officially registered) and no census data

available on district or village level to determine a population frame for a random sample. Furthermore the villages had no streets, street names or house numbers or fixed phone lines which are usually a requisite for standard random-sampling methods. Given these difficult conditions and the restricted financial and time resources of the project, the quota sampling was the most appropriate method in the rural study areas.

Methods of probability sampling to enhance the representativeness of the data were unfeasible. However, to test the representativeness of the data, the survey results have been controlled with the results with respect to migration of census data on a national and regional level - and if possible also on the department level. The comparison suggests that the survey data can be considered as nearly representative. In addition, the application of non-probability samples might have had other effects on the data: People with (strong) ties to the home community or who are open-minded towards research might have been more likely to be included. At the same time, permanent migration of people or whole families might be underrepresented. However, the qualitative interviews suggest that permanent migration of whole families is rare in both study areas, and that most people - even if they migrate permanently - maintain ties to the rural areas.

Another potential limitation of the sample is that the survey was conducted during the dry season in the rural areas, the time period in which many young people leave the region to find working opportunities elsewhere. However, the micle-team had several reasons to conduct the survey during the dry season. First of all, people are more available during this period compared to the three months rainy season in which the workload in the rural areas is very high. Moreover, many villages are difficult to access in the rainy season and they thus would have been excluded from the survey. In the knowledge that many people might have left the rural areas at that time, the survey was extended to include the capitals, as potential current places of residence of migrants, in order to include current migrants in the survey.

The questionnaire

In the process of compiling the questionnaire, the micle-research team made methodical and practical decisions that influenced the further research process. A general decision and challenge was to conduct an individual survey rather than a household survey and to develop one universal questionnaire that fits migrants, return migrants and people without migration experience in both rural study areas and the capitals. The decision for an individual survey has been taken because perceptions of environmental changes and reasons

for migrations vary among household members and might not be expressed correctly when only surveying the head of the household (Davies 1996). Overall, answering the questionnaire should not take longer than 30 minutes, which is relatively short compared to other surveys (e.g. enquête REMUAO or the ‘Where the rainfalls’ questionnaires lasted up to 2,5 hours (Rademacher-Schulz et al. 2012)), but seemed to be an adequate duration given the field experience with the qualitative interviews.

A major decision was to focus on the migration motives in a more general manner rather than to ask for the direct impact of the environment on the migration decision as other projects had done before (e.g. EACH-FOR-project (Warner 2011)). The aim was to get more information on the weight of environmental factors on the migration decision compared to other factors. This has been operationalized in the questionnaire by a two-step technique: a first question asked for people’s main migration motives. This was posed as an open question which the participants had to answer without being given response categories in advance. The interviewers then had to assign the response to different categories. Multiple answers were possible. A second question asked for people’s further migration motives. This time, however, the interviewers read different response categories in a rotating order to the participants which they had to confirm or reject, with the possibility of multiple answers. Environmental factors were part of the response categories. The two-step technique aimed at analysing the most important migration motives at first and then at finding out about the importance of environmental changes on the migration decision without explicitly asking for it. This procedure was applied for people’s first and last migration.

The decision to focus on people’s first and last (most recent) migration, instead of using a time consuming complete life migration history, has been another important decision taken in the research process. The first departure was chosen because it usually represents a significant life event (c.f. Henry et al. 2004) and the last migration had been chosen due to its actuality of the migration experience. The combination of the two was assumed to provide information on the continuity and importance of migration and to give a hint on changes in motivations between the first and later migrations. As a result the survey included migrations from the year 1937 to 2012 which enabled an analysis by time period later on.

The conceptualization and operationalization of the theoretical terms and concepts used in the questionnaire have been challenging. The qualitative interviews during the explorative fieldwork had shown that certain terms had different meanings for the author (and

the micle-team) and the people from the study areas. Therefore, terms, such as “migration” or “climate change” were avoided in the survey. In the questionnaire, the term “migration” has been replaced by a more general wording terms and has been defined in a most simple way as “leaving the village of origin for at least three months”³⁶. In contrast to other research projects (e.g. the “Where the rainfalls”-project) categories - such as seasonal, temporary or permanent migration - have not been defined prior to the survey but afterwards for the analysis. The survey thus only asked for the duration of the absence from the village in months and years. The terms “climate change” or “environmental change” have not been used in the survey to avoid misunderstandings or a pure repetition of global climate change discourses (Tschakert 2007; Mertz et al. 2009; Weisser et al. 2013).

The impact of environmental factors on people’s livelihood and food security- which is considered the main intermediating factor between the environment and migration - had been queried by several questions. It has been operationalized by questions about the main economic activities of the survey participants and their families and the environmental sensitivity of these activities as well as by questions about the sufficiency of yields throughout the year in 2010, in which rainfall was relatively good, and in 2011, in which rainfall conditions were poor. Moreover, the impact of environmental changes on people’s livelihood and migration decision has been operationalized in various ways to transform the information into measurable attributes. Environmental factors have been included in the questions about the migration motives (see above). For this purpose they have been operationalized under the category “food security”. This category comprises the response items “the yield has not been sufficient to nourish the family”, “the soil is/was tired (infertile)”, “rainfall has been insufficient”, “the field/s are/have been too small”, “lacking access and availability to land” and “floods”.

For the compilation of the questionnaire, the research team has considered other research questionnaires on related topics in order to generate - at least partly - comparable results (e.g. REMUAO, EACH-FOR, etc.) (Bilsborrow et al. 1984; Bilsborrow 2009).

³⁶ The terms population migration or mobility are not clearly defined but can be classified by the following criteria: a) temporary dimension: duration of migration (temporary (seasonal, short-term, long-term) and permanent); b) spatial dimension: geo-administrative level (internal, intra-regional, international) and destination areas (rural-rural, rural-urban, urban-rural, urban-urban); c) character of migration: motivations and causation (voluntary and forced) (Treibel 1999; van Dijk et al. 2001; Naik 2009). Although migration is often determined by a period of six months being absent from a specific area, the duration of three months seemed more appropriate for this study, because seasonal mobility is often shorter than six months. Similarly, the Foresight-project has used a period of at least three months outside the original place of residence to define migration (Foresight 2011).

The structure of the questionnaire, the wording and the response categories have been discussed with local partners and have been subject to a pre-test. The pre-test (conducted on about 20 people) aimed at testing the applicability, completeness, comprehensibility and quality of the questionnaire, i.e. to identify difficult and misleading questions, to check the filtering, the continuity of the interview and the actual time needed to complete the questionnaire (Schnell et al. 1993). Subsequently some questions have been restructured and response items have been changed or added prior to the actual survey conduction.

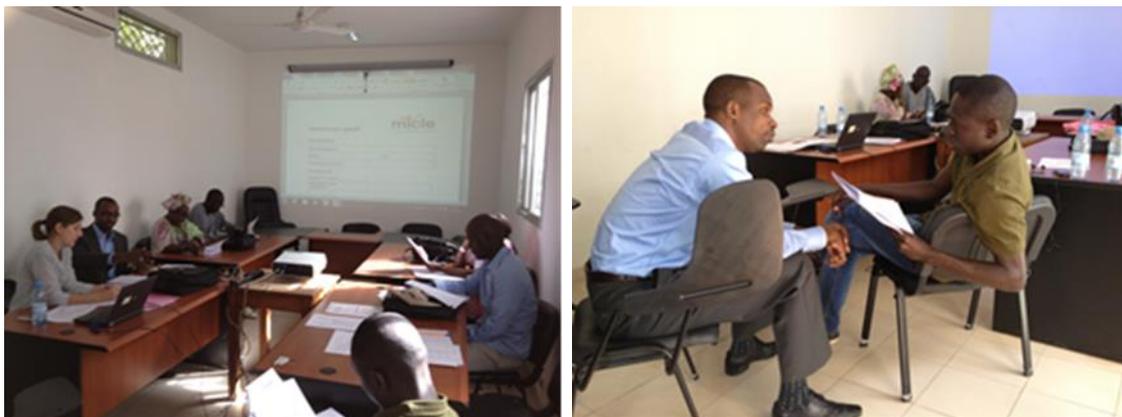
The final questionnaire consisted of four main thematic parts: 1) information on the participants - socio-demographic data, 2) own migration experience (or reasons not to migrate for people without own migration experience), 3) general attitudes towards migration, 4) livelihoods and perception of environmental changes.

The field work: organization and conduction of the survey

The organization of the field work included, requesting research permission from the respective ministries in Mali and Senegal, informing local authorities about the survey conduction, organizing accommodation, food and transportation to and within the rural study areas as well as recruiting and training the interviewers. The recruitment and training of the interviewers was a main requisite for the data collection. In each country, the research team recruited six local interviewers with the support of local institutions: the Laboratoire de Recherches sur les Transformation Economiques et Sociales of the University Cheikh Anta Diop of Dakar (LARTES) in Senegal and the NGO Point Sud in Mali.

The interviewers were professionals and student interviewers of different ages, genders and ethnicity and were required to speak the local language/s as well as French fluently. In a one-day training workshop, the working conditions were clarified and the interviewers were guided to practice, discuss and familiarise themselves with the questionnaire (see Picture 5 and Picture 6). Special emphasis was given to the correct understanding and translation of the French questionnaire into the local language with the help of a local assistant. The translation of the questionnaire by the interviewers might have had an effect on the results since the questions might not have been translated similarly by the interviewers. However, since it would have been difficult and costly to translate the questionnaire in the numerous diverse languages and dialects spoken in both study regions, it had been agreed to tolerate (potential) limitations and give special emphasis to the translation during the training.

Picture 5 and Picture 6: One-day training workshop for the interviewers in Dakar/Senegal.



Source: Author.

The field phase for the survey started in March 2012 in the rural study areas and lasted for ten days before it moved on to the capitals for another week of surveying. This allowed the collection of contact details of potential survey participants in the capitals. In each selected village, a team of at least two interviewers followed traditional customs by first visiting the village chiefs with a small present, usually tea and sugar, as a token gesture to ask for his permission to survey people in the village. Most chiefs had already been informed on the survey beforehand.

Prior to the inquiry, the interviewers pointed out that the information would be treated confidentially and that it was exclusively for research purposes and not related to any project planning. This seemed to be necessary because the qualitative interviews had shown that the appearance of foreigners or non-locals was often automatically associated with donor money and development projects by the villagers, which could affect the responses. Moreover, the team had been instructed to give as little information as necessary to the chiefs and the interviewees on the purpose of the study in order to avoid an influence on the responses. Usually, they were told that the survey aims at collecting information about the mobility of the people in the village and their living conditions, but not that the survey aimed at identifying the linkages between environmental change and migration behaviour.

In contrast to European survey standards, the survey participants were asked for their names prior to the survey as a matter of respect. They could then decide if they wanted their name written on the questionnaire or not. The questionnaires were usually conducted one-on-one on paper (see Picture 7 and Picture 8). Following a day in the field, the author

checked the completed questionnaires for consistency and completeness and did a questionnaire statistic - according to the quota sample criteria - to document the data collection in a survey diary.

Picture 7 and Picture 8: The interviewers in the field surveying people.



Source: Author.

In the capitals, the survey was conducted more autonomously by a team of two people, directly after returning from the rural study areas. Filled questionnaires were submitted to the author in the evenings of each survey day, in order to coordinate the quota statistic and check for consistency and completeness. In Senegal the presidential elections had been peacefully finished prior to the start of the survey, while in Mali, the data collection finished the day before the military coup in April 2012.

The data analysis

Prior to the actual data analysis, the survey responses was coded and inserted in SPSS, a program for statistical data analysis, and in a next step the data was checked intensively for consistency, completeness and plausibility. For the data analysis, firstly, the data has been described by frequency distributions before conducting bivariate and multivariate analyses in order to test the relationship of two or more variables. To prevent general assumptions of causality on the basis of statistical correlations, the data had been controlled for the effects of confounding variables. Statistical significance was tested by applying chi-squared (χ^2) tests at a significance level $p \leq 0.05$ (Schnell et al. 1993). The use of multivariate statistics has been limited because the data contains several nominal and ordinal variables while most multivariate statistics require a metric (interval or ratio) scale.

The data has been analysed separately for Mali and Senegal in order to be able to compare the survey results of the study areas with each other and to identify generalizable results

as well as local characteristics. Moreover, analyses were performed separately with respect to individual characteristics of the participants, such as age, gender, the level of education, and the main economic activity, because the author assumed an effect of these characteristics on the migration behaviour and susceptibility to environmental stress. Migration was generally used as the dependent variable. Since the analysis of the migration motives showed no important differences between the motives of the first and the last migration or by the time of the migration experience, the two datasets have often been combined in the analysis.

Moreover, the original dataset has been transformed into a migration dataset in which each migration constitutes a case to facilitate some analyses. This means that *n* (as the number of cases) does refer to the number of migrations, not to the number of survey participants, included in the analysis. Whenever, the migration dataset has been used, this is indicated. Due to the inquiry of people's first and last migration, the survey includes migrations between the years 1937 and 2013, which have been grouped into decades for the analysis of changes of migration behaviour over time. If there have been differences in the analysis by the decades in which migration took place, these differences have been highlighted in the analysis. However, for the interpretation of the results by decade, it has to be considered that the number of migrant's experiences is not equally distributed it can thus only function as an approximation.

5.3 The qualitative methods: Interviews and participant observation - based on Grounded Theory

The sampling: Who has been interviewed?

The qualitative approach includes the methods of participant observation as well as qualitative interviews in the two rural study areas and with migrants from these areas in the capitals - Dakar and Bamako. The main interviews were conducted from January to April 2012. However, exploratory interviews and notes from the explorative phase³⁷ in the beginning of the year 2011 have been integrated in the analysis as well.

In total, 59 semi-structured interviews have been considered in the analysis (see Table 2). Most of the interviews are one-on-one interviews (*n*=50). A few interviews have been

³⁷ During the explorative phase in 2011, the author conducted about 30 interviews, of which most were talks with village chiefs or informal community meetings/group discussions with male village elders. The author took notes of all interviews in a field diary, but only a few interviews have been recorded due to time and resource limitations in the project.

conducted with two or three persons at the same time in circumstances where this made the interviewees feel more comfortable or if another person joined the discussion later on. However, the interviewer only continued the interview if she assumed that the presence of an additional person would not influence the responses. Interviews with several people at a time were more common in Mali. This is a reason why the total number of interviews is lower in Mali.

In a few cases, the village chief preferred to have a short informal community meeting with the elders and the author of this study. These meetings were treated as group interviews. The meeting of the elders to greet guests and discuss her research request has been a custom and a prerequisite for the one-on-one interviews with other community members. Although, these group discussions had not been planned initially, they turned out to be very informative and valuable for the later analysis and contributed to a higher confidence in the interviewer and the purpose of the interviews. In addition, some group interviews with women were realized accordingly to discuss similar but also specific and delicate questions with women only. The duration of the interviews varied from 15 minutes to one hour, with most interviews lasting about 30 minutes. The interviews were conducted in French if possible, but more often had to be conducted in local languages with the assistance of a translator. All interviews had been recorded with the agreement of the interviewees to be able to transcribe them for the analysis. In order to facilitate the analysis, the interviews have been transcribed with a focus on the interview content - without including further information on paraverbal or nonverbal events (Dresing, Pehl 2013). Table 2 illustrates the interviews conducted by location and age, gender and migration experience of the interviewees.

The first interviewees were conducted with village chiefs - usually elderly men - in different villages in the two rural study areas - as they were the first contact persons. The selection of further interviewees were selected with respect to the aspects that should be analysed in a next step - according to the theoretical sampling in Grounded Theory (see below). The qualitative interviews aimed at analysing the individual perceptions of environmental change, and the individual experiences and motive of migration to gain a better understanding on the complex relationship of the different factors that influence the migration decision and patterns.

Table 2: Interviews conducted by location, gender, age, and migration experience of the interviewees.

	Mali	Senegal	Total
One-on-one interviews	n=20	n=30	n=50
interview location:			
rural study areas	13	17	30
capitals	7	13	20
gender:			
women	7	7	14
men	13	23	36
age:			
18 to 30-years old	10	8	18
31 to 50-years old	7	10	17
51 years and older	3	12	15
migration experience:			
yes	19	29	48
no	1	1	2
Group interviews: (all in rural study areas)	n=6	n=3	n=9
gender:			
women	2	1	3
men	4	2	6

Source: Author.

In addition to the interviews, the participant observation during five months in the field, have been an important research method to gain valuable information and insights on the living conditions and the normal course of life in the study areas. Observations and the content of informal talks have been noted in a field diary and have been integrated in the analysis. In addition to the fieldwork, the author interviewed several experts on migration and climate change in Linguère, Dakar and Bamako and the content was noted in the diary during and after the talks.

The data collection and the data analysis: a Grounded Theory approach

Grounded Theory is a methodology developed by the two American sociologists Barney Glaser and Anselm Strauss. It aims at generating theory - or modifying existing theory - based on mainly qualitative, empirical evidence (Glaser, Strauss 1967). In a Grounded

Theory approach data collection, analysis and theory development are interrelated processes and the theoretical sampling, the data coding and the constant comparison of the research phenomena with the context are fundamental elements of the research (Corbin, Strauss 1990; Strauss 1991; Strübing 2008a).

Grounded Theory has strongly influenced the qualitative data collection and analysis for this thesis, which aims to develop a theory explaining the migration behaviour in areas affected by environmental stress by modifying already existing conceptual approaches. The data for the analysis of this study includes the qualitative interviews (both individual and group) and the notes of a field diary that the author kept throughout the field work - as this is suggested in literature (cf. Fetterman 1997).

Theoretical sampling refers to the process of data collection in Grounded Theory, in which the researcher collects, codes and analyses the data in parallel and at the same time decides which data to collect next as well as to where or from whom to get these data (Glaser et al. 2008). Based on the researcher's theoretical knowledge and her/his idea of the phenomenon s/he wants to study, s/he selects a group of individuals, an organisation or community representative of that phenomenon (Corbin, Strauss 1990). Usually, the process starts with the selection of one or few "cases". Thus, the theoretical sampling is a process of related decisions in which the criteria for further choices will get increasingly specific during the process. Depending on the state of the research the sampling aims at developing typical characteristics, testing relationships or bridging the gaps in the analysis and theory. This can be realized by gathering new data and by reanalysing and recoding the existing data with respect to new aspects (Strübing 2008a).

Following the theoretical sampling approach, the author first chose the interviewees randomly in different villages in the two rural study areas and then concretised the criteria for the aspects to highlight next and the choice of interviewees accordingly. The villages for the fieldwork had been chosen randomly at first, and in the following process by criteria, such as accessibility, wealth or migration specifics (e.g. the number of (international) migrants). The interviewer made notes of her observations in the field and of each interview conducted as the basis for the decision on which aspects to focus on in the next interview and the interviewees that could provide information on these aspects. Initially, the interviewer focussed on the changes of the structural social-ecological conditions in the study areas over time and how they effect people's migration to explain why some people migrate and others do not. Since in the literature migration had been depicted as a

predominantly male phenomenon, in the explorative phase the author started by interviewing elder men because they were assumed to have the best knowledge on changes in the environment and in the migration behaviour over time. The selection of interviewees, however, shifted during the research process to younger people and included more and more female interviewees.

For the data analysis, Strauss and Corbin (2010) offer a three-level *coding* process to structure and sharpen the analysis of the empirical material. This includes open coding, axial coding and selective coding. In the *open coding*, the data from field notes or transcripts is broken down in order to identify concepts. As more data is coded, conceptually similar events/actions/interactions are grouped together into categories and subcategories. One important technique for the open coding is that phenomena are compared with distant or contrary phenomena in order to identify similarities and differences and to be able to carve out the relevant characteristics of the concept. In the *axial coding*, the subcategories are related to categories by comparing the conditions, context, intervening condition, strategies (action/interaction) and consequences - called the “coding paradigm” - for phenomena identified as relevant for the research question (Strauss, Corbin 1991; Strauss, Corbin 2010).

Within this process one or two theoretical (tentative) “core” categories, relevant to develop a theory, are identified. In the *selective coding*, all categories are unified around a core category in order to integrate the theoretical concepts developed during the process into the core category. Selective coding includes the recoding of already coded data and memos or the coding of new data in order to explain the relation of the different concepts to the core categories and make sense of the theory. The coding aims at generating theoretical strong concepts from the data to explain the phenomenon researched and the core category presents the central phenomenon or the main analytical idea of the study (Corbin, Strauss 1990). Theorizing is involved in all these steps and requires that the researcher builds and tests the theory during the research process. The data coding and recoding of the transcripts has been supported by the use of a computer programme for qualitative data analysis MaxQDA (Kuckartz 2010).

During the whole research process the researcher writes *memos* in which s/he documents ideas, hypotheses and (potential) relationships with respect to the data and their (potential) relationships. The writing of memos contributes to the formulation and revision of the theory during the research process (Corbin, Strauss 1990). Organizing and structuring the memos generates new ideas that in turn have to be written as new memos.

During the coding process, at first the interviews with elder men and the theoretical concepts developed from these interviews have been compared with each other to identify the main characteristics of migration by comparing them with homogenous cases - a process called “minimal comparison”. In a next step, the theoretical concepts have been compared to the interviews with elder women, young men and young women and thus with heterogeneous cases (“maximal comparison”) (Strübing 2008b). The interviews have been analysed by considering the “coding paradigm” - the conditions and the context of migration, intervening conditions and strategies as well as the consequences of migration. In addition, interviews with people without personal migration experience have been used as contrasting cases to develop the theory as well as the theoretical analysis of migration in “developed” countries has been included as distant cases.

Due to the constant comparing of different cases, the focus shifted during the research process from elder men interviewees to younger people of both genders and from the focus on the structural, social-ecological conditions of migration to more and more considering also individual motives and aspirations - and their ability to realize them - as determinants of the migration decision. As a consequence, the linkages between the environment and the migration decision started to appear in a different light. The comparison of the people’s reasons to migrate and to stay supported the choice of the concepts of “aspiration” and “capability” as the main factors - and core categories - to explain migration in areas affected by environmental changes. In this thesis, the findings of the qualitative analysis will be presented by using quotations in order to provide evidence and to illustrate points.

The interview guideline for the explorative phase has been based on hypotheses developed by an initial literature review. While conducting more interviews and collecting more information on the environment-migration nexus, the author constantly adapted the interview guideline to the shifting research focus and the information required for the development of the theory.

Despite its constant changes and development, the interview guideline consisted of the following thematic parts that usually have been subdivided into main research questions and follow-up questions: 1) personal migration experience, 2) personal migration motives, 3) migration decision; 4) migration experience in the household, 5) social networks, 6) attitudes towards migration, preferences, 7) livelihoods (perception of different environmental changes, perception of rural versus urban life), 8) socio-demographic data.

The fieldwork: conducting interviews and participant observation

The data collection and analysis of this study is based on extensive fieldwork during the years 2011 and 2012 in the two rural study areas as well as in Dakar and Bamako. During the field work, the author was accompanied by a local person who operated as a translator and as a “door opener” to rural research communities due to his local knowledge on the language, customs and area (Kruse et al. 2012). Picture 9 and Picture 10 show two example villages in the study regions.

Picture 9: A Fulani village in Senegal.



Source: Clemens Romankiewicz.

Picture 10: A Dogon village in Mali.



Source: Author.

A day in the villages started by greeting the village chief with a little symbolic gift, such as tea and sugar or kola nuts in Mali, which are a cultural symbol of hospitality and respect. The first contact aimed at explaining the context and the reason for the visit and to build up confidence in order to get the permission to conduct interviews in the community as described for the survey conduction. As a matter of respect and adherence of the traditional hierarchies, the first interview was conducted with the village chief or a group of village elders.

Particularly in Mali, the village chiefs often were worried of not representing the village interests adequately if interviewed individually and that other community members might be suspicious and accusing them of taking advantage of the talks with “white people” if there were no other “witnesses”. In Senegal, the author often encountered marabouts, spiritual heads that play a special role in the communities. As a matter of respect they had to be greeted and interviewed (at least shortly) in order to have their blessing for the mission. These rituals with local hierarchies may have cost some extra time, but were crucial for the success of the research.

Prior to the fieldwork, the author - a young “white” female researcher, was worried that her appearance could influence the research process in a negative way due to the strong hierarchies between men and women and among elder and young people. However, being foreign and the related different appearance led to special status of the author in the research communities which has been expressed in various ways (e.g. by being invited to eat from the same bowl as the male village chief, while women usually have to eat from different bowls and are usually the last to eat). Moreover, being a women often facilitated access to interviews with women which was not possible for male research colleagues.

The majority of interviews were conducted one-on-one. This was important to reduce the degree of social control through other community members. This has been particularly important for the interviews with the young people in order to get an honest - in contrast to a socially accepted - response on their individual migration motives, their opinion on the life in the rural areas and their aspirations for the future. Particularly, in the research communities where female migration has been prohibited or disapproved of, these questions have been considered extremely sensitive.

Whenever it has been possible, the author conducted the interviews in French without a translator. However, most interviews had to be translated. Although French is the official language in Mali and Senegal, most interviewees, particularly in the rural areas often only speak local languages: in the Senegalese study area, the local languages spoken are Wolof and Fula while people in the Malian study areas either speak Bambara, Dogon or Fula - including various local dialects. The translation might be considered a limitation of the data because information might get lost or change the meaning by being translated. However, considering the diversity of languages spoken in the two relatively small study areas, it seemed to be the only realistic option to realize the interviews. The author learnt some basic phrases in the main local language, which allowed checking of the translation as well as demonstrating to the interviewees a will to understand the local language and culture and often lightened the interview atmosphere.

Another challenge was that French is not the mother tongue of the author which, however, turned out to be an advantage because it comforted the interviewees who often were afraid of making mistakes when speaking French to a “white foreigner”. Moreover, the literature suggests that the professional and methodical skills of the interviewer are more important for the quality of the interview than the linguistic skills as long as s/he is able to ask adequate perpetuating and in-depth questions (Kruse et al. 2012). Furthermore, non-fluent

language skills of the interviewer can constitute a methodological advantage because situations of not-understanding bring the interviewer to ask for more detailed descriptions, paraphrasing or examples which in turn create rich narratives (Kruse et al. 2012).

Despite the challenges of conducting research in foreign cultures, there are some methodological advantages. For example as the interviewers usually have little understanding of the research context and are thus on the one hand forced to ask for detailed descriptions and explanations and on the other hand carry out very detailed analysis later on (Kruse et al. 2012). The quality of the research in foreign languages and cultures often depends on the degree of cooperation between researchers and local people as well as on the reflection of the interpretation and thoughts by discussing them with locals or people that are familiar with the research context (Kruse et al. 2012). In order to get the best outcome, local people were involved in the questionnaire development and the training of the interviewer for the survey and in the establishment of interview guidelines for the qualitative interviews.

When conducting the qualitative interviews, the local translator was instructed to point the interviewer to a different wording or formulation of the questions if necessary to avoid misunderstandings. Moreover, certain statements or behaviours were discussed with the translator and, where possible, with research colleagues in the evenings in order to clarify uncertainties and to reflect on the author's interpretation of the interview content. In addition, the general micle-project findings on the linkages of environmental changes and migration have been discussed with experts on migration and climate change from Mali and Senegal in a stakeholder-workshop in Dakar in December 2013.

6 Migration and livelihoods in the study areas

6.1 Livelihoods in the study areas: livelihood conditions, stressors and strategies

The current literature on the environment-migration nexus widely assumes that migration in areas affected by gradual climate and environmental change is an adaptation strategy to these changes and is an important activity for sustaining people's livelihoods (McLeman, Smit 2006; McLeman, Hunter 2010; Black et al. 2011b; Milan et al. 2011; Adger, Adams 2013; Ober 2014). However, not all people in one area are equally affected by environmental changes; the effect depends, amongst other factors, on people's vulnerability to environmental stress. People's vulnerability to environmental risks is determined by the dependency of their livelihood on the natural environment and on the availability of assets and strategies to compensate for environmental stress (de Haan et al. 2002; Black et al. 2011a; Foresight 2011). People who rely on the natural environment for their income and who have few options for livelihood diversification are assumed to be the most likely to be affected by environmental change - this applies particularly to lower-educated and poorer people (Foresight 2011).

Many people in the West African Sahel depend on smallholder farming or livestock breeding and are thus presumed to be highly vulnerable to environmental changes that influence their harvests and yields, such as temperature rise, land degradation, and the high variability of rainfall in the region (IPCC 2007b; OECD 2009; Mertz et al. 2010; Sissoko et al. 2011; Samimi, Brandt 2012; Brandt et al. 2014a). Food security is considered a main stressor of people's livelihoods and a main cause for migration, particularly during the months before the harvesting (which usually starts in October), which is known as the hunger period (Davies 1996; Rain 1999; Ezra, Kiros 2001; USAID 2010).

In order to cope with food security and a lack of financial means, people living in areas with harsh environmental conditions over time develop strategies to deal with the uncertainty of their livelihoods (Rademacher-Schulz, Salifu Mahama 2012). Particularly, the diversification of income sources is considered to be an important means for individuals and households to reduce the risks from crop failure and (future) external stress (Davies 1996; Ellis 1998; Ballo 2009; Mortimore, Adams 2001). Income diversification can be realized by local activities or migration. However, the local options are often limited in rural areas, which often leaves migration as the only available option to spread the risk of food insecurity and to sustain the household's livelihoods (Scoones 1998; Ellis 2003; Schmidt-Verkerk 2011).

People's livelihood conditions: a high dependency on the natural environment due to small-holder agriculture as the main source of income

In the two rural study regions of Bandiagara in Mali and Linguère in Senegal most of the population depends on subsistence and small-holder farming (see Picture 11 and Picture 12). Agriculture, including arable farming and livestock breeding, is the main economic activity for 67% of the survey³⁸ participants interviewed in the rural study regions and for 93% of their families, with arable farming/rain-fed crop production the main form of agriculture (79%). If considering all survey participants, including those in the capitals, agriculture still constitutes the main economic activity for half of the people and for 89% of their families.

Picture 11: Crop production in Mali.



Source: Yaya Koétioumbé.

Picture 12: Livestock breeding in Senegal.



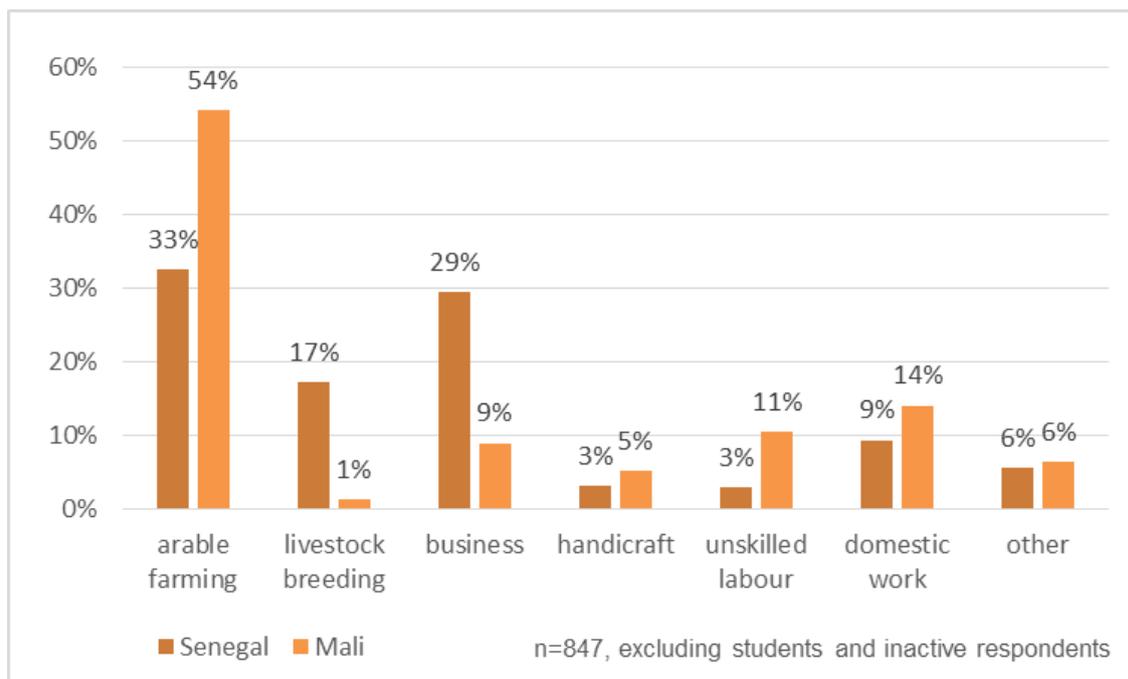
Source: Author.

Arable farming of crops - mainly of millet, groundnuts, beans and sorghum - makes up the largest proportion of all survey participants' activities, with a higher percentage in Mali³⁹ than in Senegal (54% versus 33%). In the Senegalese study region, livestock breeding constitutes another important source of income (17%) (see Figure 19). Among the Senegalese survey participants, trading in commodities, such as car tires or agricultural products, is another important source of income (27%), while the Malian respondents are more likely to work as craftsmen or unskilled labourers (28%), such as watchmen or housemaids. Participants surveyed in the capitals almost exclusively named non-agricultural activities as their source of income.

³⁸ By using the term "survey", this study refers to the quantitative data based on the micle-survey and it uses the term "interview" to refer to the qualitative data.

³⁹ The terms Mali and Senegal, as well as Malians and Senegalese, are used in the analysis as synonyms for the Malian and Senegalese study areas, as well as for people from the respective study areas, and do not refer to the whole country or people.

Figure 19: Main economic activities of the active survey participants.



Source: Author; Senegal n=418, Mali n=429.

The general level of education⁴⁰ is very low among the survey participants from both study regions: only 24% have obtained formal education. Overall, the level of schooling held by the survey participants is slightly higher among the Senegalese than the Malians (80% versus 73%, respectively), but the differences are higher among the youngest participants, 18- to 30- year-olds, with 52% of the Senegalese having no formal education, compared to 70% in Mali. Regarding gender, the level of education is generally lower among the female respondents as compared to the male participants in both countries. While 81% of the women have not obtained formal education, this applies to 73% of the men.

With respect to the level of education and the dependency on agriculture, the survey results confirm that those who are better educated are less dependent on the natural environment and are therefore probably less vulnerable to environmental stressors. The analysis shows a significant relationship between the survey participants' level of formal education and their main economic activity ($\chi^2=95.19$, $p<0.001$, Cramer-V=0.246). The lower their level of education, the more likely respondents are to rely on agriculture as their main source of income. Agriculture is a main economic activity for 58% of the survey participants with no formal education, but only for 18% of participants with a high

⁴⁰ For more information on the relationship between vulnerability and education in environmentally-induced migration in Mali and Senegal, see van der Land, Hummel 2013.

level of education (secondary level). People with a high level of formal schooling are more likely than those with no formal education to be involved in business or in other sectors, such as administration, health, or teaching, which are not directly dependent on climatic or environmental factors.

Both age and education level affect people's dependency on agriculture, with education level having a slightly higher impact. Considering the age of the survey participants, the findings show that the elder age groups, those 50 years or older and the 31- to 50-year-olds, are more likely to depend on agriculture - farming and livestock breeding - than the youngest people, the 18- to 30-year-olds (62%, 52%, and 36% dependence on agriculture, respectively). The percentage of the youngest group involved in agriculture was lower in Senegal than in Mali (30% versus 41%). On the contrary, the younger respondents more often indicate business and other activities as the main economic activity.

The economic situation of the households in the two selected study areas is difficult to assess due to different reasons⁴¹. The author has thus decided not to consider the economic situation in the analysis instead of analysing data that is too vague to contribute to reliable results.

Lack and variability of rainfall as major livelihood stressors

In both study areas, the course of the year is divided into a three-month rainy season - from June until September - followed by a nine-month dry season. People heavily rely on the rainy season for their yields and their livelihoods. The data on precipitation shows

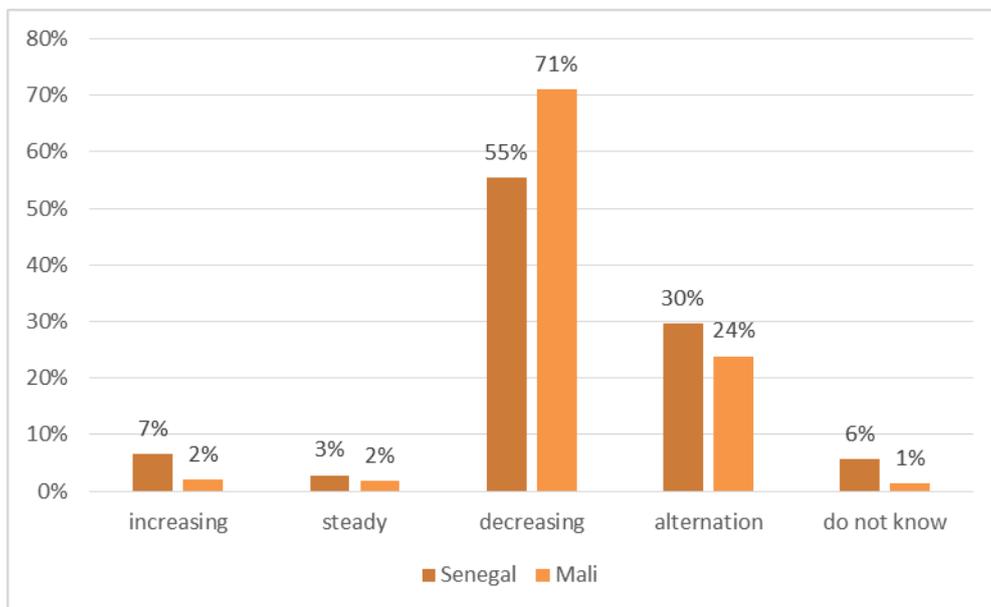
⁴¹ First, most households mainly rely on subsistence or small-holder farming and are often supported by irregular remittances of other household members in migration. Secondly, the possession of certain consumer goods and the number of animals might not give a realistic picture on the economic situation of the household since this differs by the main economic activity and the financial support from other sources. For example, the wealth of a livestock breeder be measured? in the number of animals, while the wealth of a farmer might instead be measured in the size and fertility of their lands, while households that have a high support of migrant family members might measure their wealth by the amount of goods they possess. Thirdly, the number of cattle of a livestock breeder cannot easily be compared with the yields from farming or good possession, such as a car or a television. In addition, it is a delicate topic to ask livestock breeders for the value of their cattle (the respective questions in the survey showed a high percentage of missing values), and farmers often do not know the exact size of their plots (by Western measure standards), making it very difficult to get reliable responses. Fourthly, the attempt to measure the possessions of survey participants from the Senegalese and the Malian respondents in the survey showed that the possessions differ considerably among the respondents from both study areas. People in the Malian study area often possess a motorbike, while people in the Senegalese study area typically possess a horse or a television instead.

Other studies, e.g. the USAID livelihood zoning for Mali, measured wealth in their study areas by the household size, the size of land, the number and type of animals and the number and type of other assets (USAID 2010). However, this only seems to be a feasible method for a small number of households with the same economic activity – either rain-fed crop production or livestock breeding – and a similar variety and number of animals. Otherwise it is difficult to determine whether a household which, for instance, possesses a cattle is less, equally wealthy or wealthier than a household with a donkey or a horse, one with three sheep or one that possesses a motorbike, but no animals.

that rainfall strongly varies between years and between the study areas, but that rainfall slightly increased during the last years compared to previous decades (see Chapter 4.3).

The findings, however, show that the survey participants predominantly perceive negative changes in the quantity and variability of rainfall over the last 20 to 30 years - compared to the years before the droughts. Malian respondents generally perceive the changes in rainfall more negatively than respondents from the Senegalese study area, who often assess the changes as naturally variable. Figure 20 illustrates that most participants perceive a decrease in rainfall, although this applies to a higher percentage to the Malians than to the Senegalese (71% versus 55%, respectively). Most participants also note an increase of interruptions of rainfall (71% in Mali and 36% in Senegal). The qualitative interviews suggest a perceived trend towards a shortening of the rainy season.

Figure 20: Perceptions of changes on the quantity of rain during the last 20 to 30 years.



Source: Author; Senegal n=460, Mali n=445.

The precipitation data shows that the annual average rainfall for the years 2010 and 2011 - the years prior to the explorative and the main research phase - varied considerably (GPCC/TRMM 1940 to 2012). In the year 2010, rainfall was about 60% above the annual average in both study areas. In contrast, in 2011, rainfall was almost 20% below the annual average in the Linguère study area, while it was slightly above the average in the Malian study area around Bandiagara (Brandt et al. 2014b). The high variability of rainfall between the years 2010 and 2011 was expected to affect people's food security - with more positive impacts for the year 2010, and less positive impacts in 2011, particularly in Senegal where rainfalls were below average.

Most survey participants indicate that the yields from farming and livestock breeding for the years 2010 and 2011 were not sufficient to nourish their family. The food security of the survey participants - as expected - was particularly low for the year 2011, for which 72% of the people state that the outcome of rain-fed crop production and livestock breeding has not been sufficient to nourish their family throughout the year, while this corresponds to only 40% of the respondents for 2010 (see Table 3).

If considering only the outcome of crop production, the percentage of respondents that state insufficient yields for the needs of the family in 2011 was even higher with 85% compared to 42% in 2010. Surprisingly, in Senegal the outcome from crop production and livestock breeding was more positive for 2010 than in Mali (28% versus 53%, respectively), while it is almost equally negatively assessed for 2011 in both countries (75% and 69%, respectively).

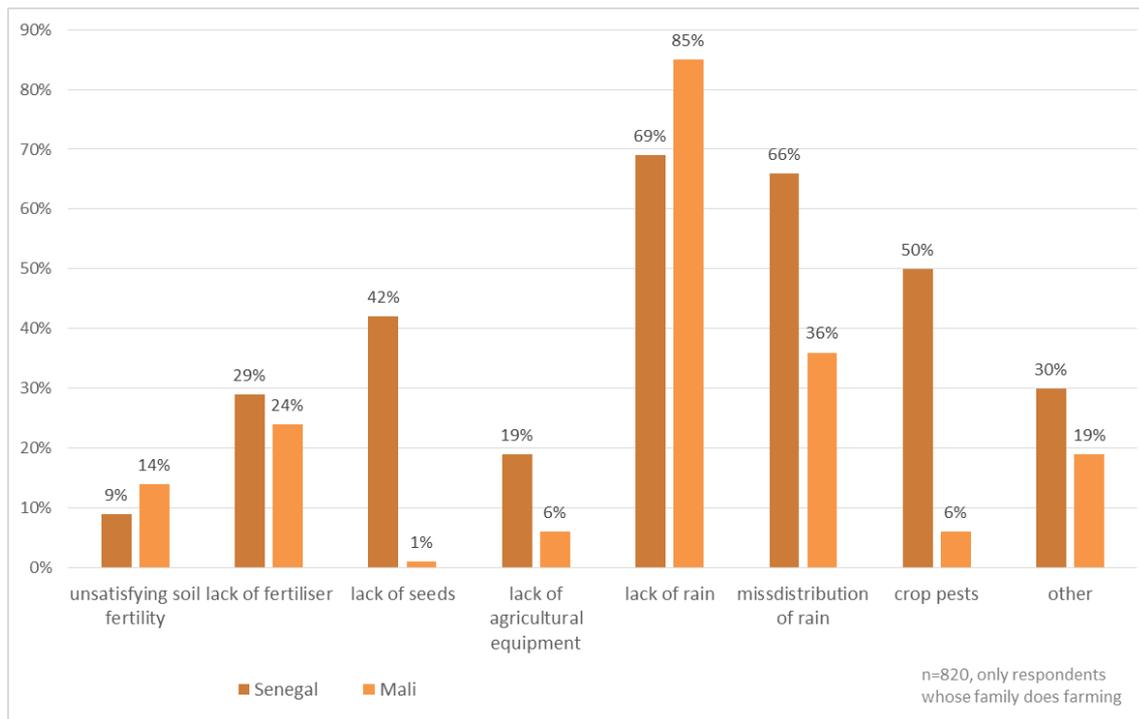
Table 3: Insufficiency of outcome from crop production and livestock breeding to nourish the family for the whole year in Senegal and Mali.

Country		Year			
		2010		2011	
		n	%	n	%
Senegal (n=304)	Insufficient outcome	85	28	226	75
Mali (n=359)	Insufficient outcome	189	53	248	69
Total		274	41	474	72

Source: Author; excluding participant's whose families only rely on one or on none of the two activities (n=242).

Since the yields in the year 2011 were assessed as relatively poorer by the local people in the qualitative interviews compared to the year 2010, the survey inquired in particular about the main impact factors on the yields in 2011. Based on the literature on general impact factors on people's yields in the region, the lack and misdistribution of rainfall were expected to be the main impact factor on people's harvest. Indeed, people considered these two factors as the most influencing factors by far for the yields in the year 2011 (see Figure 21).

Figure 21: Negative influencing factors for the yields in 2011.



Source: Author; Senegal n=384, Mali n=436; multiple answers possible.

Other limiting factors for the yields in 2011 are: the lack of fertiliser, lack of agricultural equipment and unsatisfying soil fertility. The findings illustrate that some impact factors differ considerably between the two study areas. Crop pests and the lack of seeds were relevant impact factors for the yields in Senegal, while they barely played a role in Mali. In general, the yields in Senegal seems to be influenced by a broader variety of impact factors than in Mali.

These local differences are also apparent in the qualitative interviews: While the Senegalese in a general manner emphasize the devastating effects of crop pests, such as locust and bird invasions on the yields, the Malians mention a decreasing soil fertility more often as impact factor. Decreasing soil fertility in Mali is often linked to population growth and a lack of access to additional fertile land. For the Malians, this leads to overuse of the land and is worsened by the lack of financial means for fertilizer, as the following citation of two elderly farmers from Mali illustrates. In contrast, in the Senegalese study area the availability of additional land seems to be no problem.

Avant, il n'y avait pas beaucoup de monde, donc quand on commence la culture d'un terrain qui ne donne pas, on laisse et on va sur un autre terrain. Cela fait que si tu n'obtiens rien sur une terre donnée, tu obtiens quelque chose sur l'autre. Mais aujourd'hui, il y a beaucoup de monde. (...) Beaucoup d'enfants. Maintenant, tu ne peux pas laisser la terre que tu as pour chercher une autre. Tu cultives toujours la

même terre. (...) Il n'y a pas de terres disponibles, parce que c'est ce que tout le monde cherche. (Amadou & Koala / est. 65 / m / MI / I 01 / L 188-194, 201- 202)

In general, most interviewees from both study areas state that the conditions for agriculture have worsened during the last twenty to thirty years, as illustrated by the following citation of a young farmer from the Senegalese study areas:

Je me rappelle quand j'étais petit, l'agriculture était plus rentable que maintenant. A la fin de la récolte on avait beaucoup de mil et d'arachide mais maintenant ce n'est plus le cas. A l'époque on cultivait de petites surfaces pour avoir de grands rendements, mais maintenant c'est tout à fait le contraire, on cultive de grandes surfaces pour des rendements moindres. (Moussa / 30 / m / Sn / I 32 / L 92-95)

The worsening conditions of agriculture have often been linked to rainfall patterns, but also to the other above-mentioned factors. Overall, it is often the combination of several factors that negatively influence the crop yields and pasture conditions in the study areas and pose a threat to people's food security. People from both study areas widely agree that "*Le plus grand problème maintenant, c'est le manque de nourriture*" (Koala / est. 65 / m / MI / I 01 / L 257). But not only the lack of food but also the lack of financial means the [French: "manque de moyens", author] is also often indicated as a major problem.

Livelihood strategies: migration as an important livelihood activity

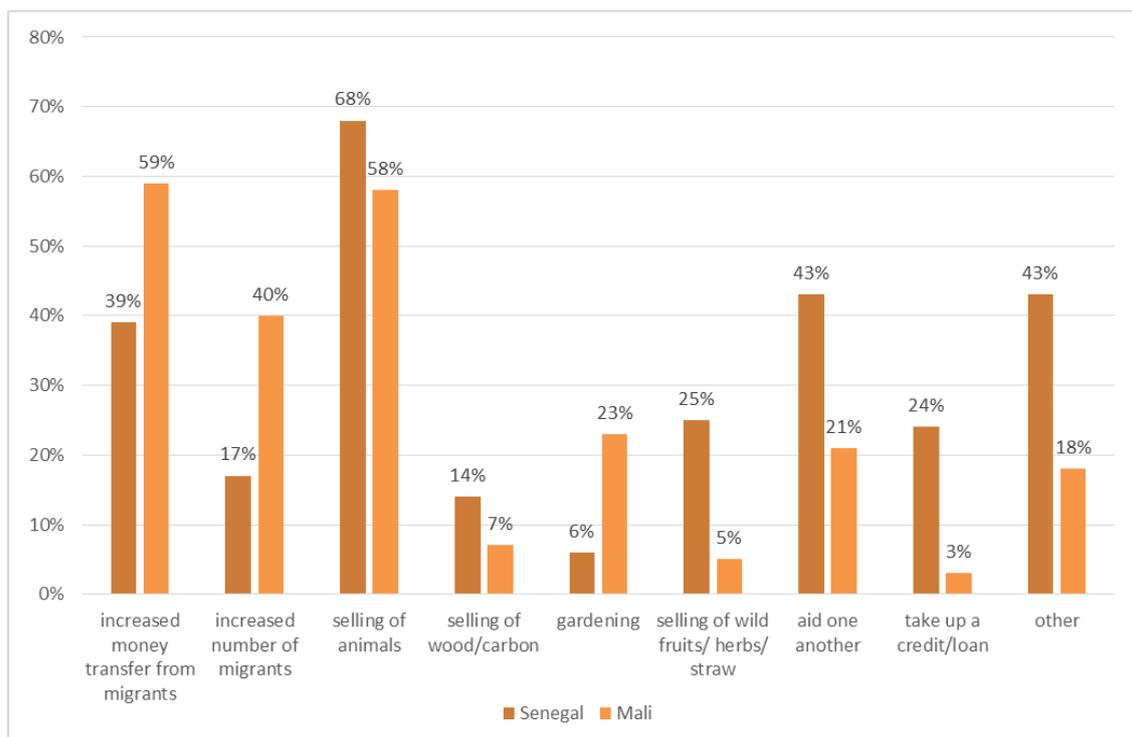
People from both study areas have developed several strategies to compensate for insufficient harvests or pasture and to sustain their livelihoods by diversifying their income sources. The majority of the active survey participants indicate more than one source of income (72%): respondents mostly combine arable farming with livestock breeding, petty trade or gardening.

However, while 90% of the respondents with agriculture as the main economic activity have a second source of income, this applies to only 53% of active survey participants that indicate a non-agricultural main economic activity. Respondents who rely on a non-agricultural activity are more likely to engage in a sole economic activity. People confirmed that they apply several strategies to compensate for poor harvests and poor pasture conditions. Figure 22 illustrates the livelihood activities for those people whose family is involved in an agricultural activity. Most of them sell part of their livestock (63%) to compensate for an unsatisfying agriculture outcome. Other strategies are to sell wild

fruits, herbs and straw (15%) and wood or carbon (10%) or are helped by other community members (32%).

Migration is an important strategy to compensate for poor yields or pasture conditions: half of the respondents confirm an increased money transfer from family members in migration and another 29% indicate an increase in the number of migrants in case of a bad harvest and unfavourable pasture conditions. The category “other strategies” includes mainly different kinds of petty trade or economic activities that are not related to the natural environment, such as carriage driver or watchmen.

Figure 22: Strategies to compensate poor yields or pasture conditions.



Source: Author; Senegal n = 411; Mali n = 443; multiple answers possible.

The strategies applied differ between the two study areas: while selling livestock is almost equally important in both study areas, the migration-related strategies seem to be more common in the Malian study areas. The Senegalese respondents indicate they instead rely on the aid of other family or community member, taking up a credit or a loan, selling wild fruits, herbs or straws, or other economic activities. Irrigated gardening is much more common among the Malians.

The qualitative interviews confirm the diversity of income sources and strategies to compensate for insufficient agricultural outcome in both study areas. Most interviewees indicate that it is very common for households to combine rain-fed crop production with livestock breeding (with either one of these activities as the main economic activity) and to

receive additional financial means from family members in migration. For Senegal, one group interview of elderly men even suggests that livestock breeding has become a more reliable activity for traditional crop farmers to ensure the families' food security due to the worsening of the conditions for rain-fed crop production. The following citations from two farmers from the Senegalese research communities summarise the most common livelihood strategies applied by the households in the study areas:

On ne peut plus se limiter de l'agriculture parce que ce n'est pas suffisant. C'est pour cela on fait l'élevage aussi et cela nous permet d'avoir d'autres sources de revenus pour satisfaire nos besoins alimentaires. Vous voyez j'ai un autre travail tout cela c'est pour combler la dépense quotidienne. On fait aussi de petit commerce c'est avec cela qu'on aide notre famille. Il faut noter aussi mes frère [qui sont partis, author] m'envoient de l'argent. (Modou / 30 / m / Sn / I 19 / L 112-116)

La première chose [que on fait pour compenser des mauvaises récoltes, author] c'est de ne pas gaspiller la nourriture si tu as une bonne récolte, de gérer ça de manière rationnelle. Et la deuxième chose, si tu as une bonne récolte, c'est d'acheter des animaux, comme par exemple des vaches, des moutons. Le troisième élément c'est d'aller travailler dans les villes pour avoir un complément d'argent. (Baba Yatta / est. 70 / m / Sn / I 15 / L 70-74)

The citations illustrate that people usually combine different activities in order to diversify their income source - with migration as one important activity.

In sum, people's livelihood conditions and the livelihood stressors in the study areas clearly indicate a risk of people's livelihood due to environmental changes. Most people in both study areas rely on agriculture as their main economic activity and are thus considered as highly dependent on the natural environment. Similar high figures have been reported by Mertz et al. (2010) in their case study on climate adaptation strategies in West Africa in which household's income has been dominated by rain-fed crop production (80%) and livestock breeding (45%) (Mertz et al. 2010: 5).

Several environmental and non-environmental factors stress peoples' food security and determine what the Sustainable Livelihoods Approach calls the vulnerability context. People identify the lack and misdistribution of rain as the dominant impact factors on their yields in both study areas. Social and economic factors, such as the lack of agricultural equipment, seeds and fertilizer, or the growth of population and lacking access to additional land, also play a role in the success of the yields; however, these factors are

less important than rainfall and differ between the two study areas. This is in line with the findings of other studies on the impact factors on yields in the West African Sahel (e.g. Mortimore, Adams 1999; OECD 2009; Mertz et al. 2010). The lack of food and the lack of financial means have been reported as the main problems in both study areas. However, the lack of financial means can occur for many different reasons including due to changes in the environment and resultant poor yields.

Surprisingly, respondents from the Malian study area generally perceive the changes in rainfall more negatively than respondents from the Senegalese study area, where the average annual rainfall is about 100 mm lower. In contrast, the Senegalese more often assess the rainfall as naturally variable. Although rainfalls were 60% above average in both study areas in 2010, people still claimed that the outcome from agriculture had been insufficient to nourish the family throughout the year, which suggests that agriculture as only source of income might not suffice to ensure the food security of the household even in good years. Against expectations, the Malians agreed more often that the yield outcome has been insufficient as compared to the Senegalese for this year. On the one hand, this could be a result of floods caused by heavy rainfalls in Mali in 2010 that might have had negative effects on yields and pasture, while on the other hand, this could indicate that the Senegalese might have developed better strategies to cope with food shortages.

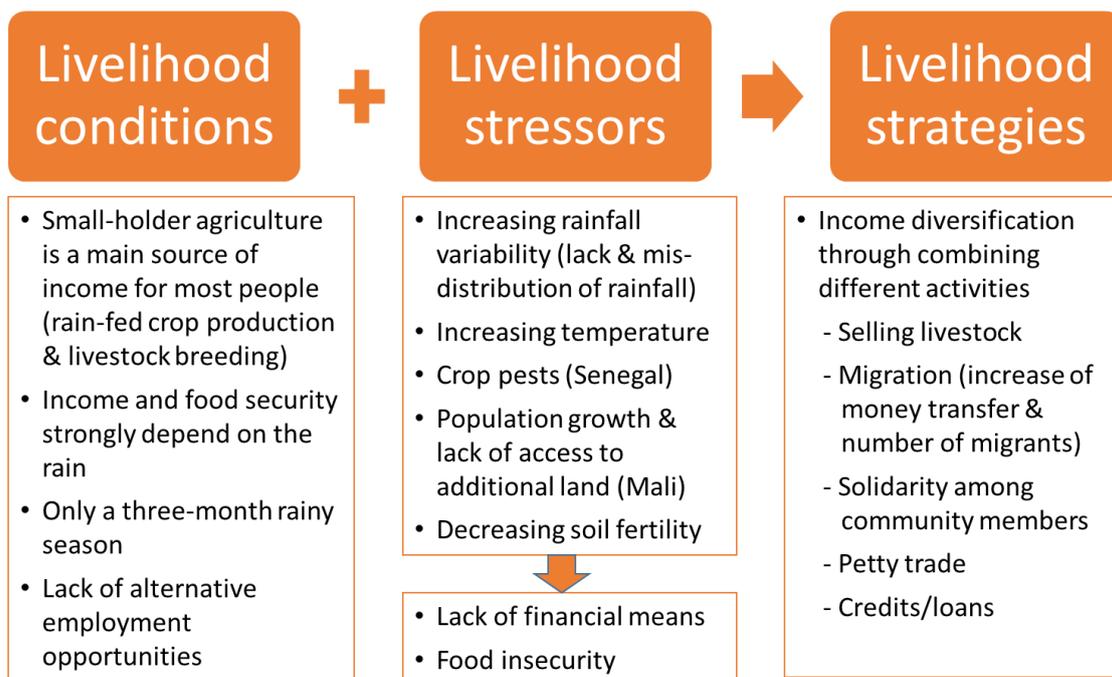
People's vulnerability to environmental and non-environmental stress, however, depends on their assets or capitals and their set of available livelihood strategies. In both study areas, people use a combination of several strategies at a time to diversify their income. Selling animals is the most common strategy in both study areas, other strategies differ between the study areas. Migration - including an increase in the number of migrants and the amount of remittances sent by household members in migration - is an important strategy in both study areas, but seems to be more important in Mali.

Other studies on the Sahel confirm the variety of strategies to adapt to environmental changes and climate variability and often identify the selling of animals and migration as the most important activities (Mbow et al. 2008; Cissé et al. 2010). Mortimore and Adams suggest in their study on farmers' adaptation in North-east Nigeria that livelihood diversification takes place in three steps: 1) investment in livelihood ownership, 2) business (trading, making articles for sale, or providing services), 3) outside income activities (high mobility between rural communities and urban or commercial farming zones) (Mortimore, Adams 2001: 55). They also add that outside activities or labour migration, however, do "not indicate the failure of farming - on the contrary, in many households, it

success” (Mortimore, Adams 2001: 55). The findings of this thesis, however, do not suggest a certain order of livelihood activities; on the contrary, the investment for livelihood ownership or local business is often financed by money from migration.

Figure 23 summarises the findings on people’s livelihood conditions, stressors and activities in the two study areas.

Figure 23: Livelihood conditions, stressors and strategies in the two study areas.



Source: Author.

Most of the livelihood activities applied in the rural areas depend on the natural environment and thus will not be very effective in the case of extreme environmental events. Moreover, both study areas offer little alternative local employment opportunities outside agriculture. This makes migration a particularly important livelihood activity because it is still effective in the case of extreme environmental events. Whether migration is part of people’s set of available livelihood activities or not depends on their capital - thus it might not be available for everybody. Even if migration is an available option, people might not choose migration from their set of livelihood activities.

In addition, not all people might consider migration as a livelihood strategy. The youngest and the most educated people from both study areas often do not depend on agriculture and might migrate for other reasons. This also suggests that agriculture might become less important as the main source of income in the future. In order to better understand the causes of migration, the next sections analyse people’s migration behaviour and the motives that influence the migration decision.

6.2 Population migration in the study areas: Experiences, patterns and migration decisions

6.2.1 Migration as a common phenomenon - with internal circular migration as dominant migration pattern

In the West African Sahel, migration is considered a common, long-established and mainly seasonal activity that diversifies a household's income sources to complement agriculture (Cordell et al. 1996; Rain 1999; Black 2001). The literature on the environment-migration research agrees that environmentally-induced migration is short-term and short distance (e.g. Findley 1994; McLeman, Hunter 2010; Schmidt-Verkerk 2011). However, the definitions and terms used with respect to temporal and spatial categories of migration differ among studies⁴² and are often not clearly defined. Moreover, the findings of environment-migration studies on migration patterns are often contradictory.

Case studies on the Sahel region have shown that circular migration predominates (Henry et al. 2004; van der Geest 2009; Tacoli 2011c; Rademacher-Schulz, Salifu Mahama 2012; Rademacher-Schulz et al. 2014) and that migrants maintain strong ties with their home community and return to their village at some point (McDowell, de Haan 2000; Goetze 2002; Henry et al. 2004). Moreover, migration from poor rural and environmentally-fragile areas is usually considered to be short-distance and assumed to take place within national borders because poor people do not have the financial means to pay the costs of transportation or visas and to lack the social networks to migrate internationally (de Haan 1999; Skeldon 2002; Black et al. 2011c; Tacoli 2011b). For example, a case study on a region in Northern Ghana finds that most migrations take place within the country and only less than three per cent migrate to neighbouring countries (Rademacher-Schulz, Salifu Mahama 2012). In contrast, Findley's study on drought and migration in the Malian Kayes region finds that migration is primarily international outside the African continent - even after a decrease in international migrations during the drought (Findley 1994).

⁴² A common approach with respect to the duration of migration is to distinguish between short-term and long-term migration or between seasonal, temporary and permanent migration. Short-term migration has been considered as a period of three months to one year (IOM 2004) or as a period of less than two years (Henry et al. 2004). Some studies also include seasonal or short-cycle migration, which has been defined as a migration of six months or less (Findley 1994; Rademacher-Schulz, Salifu Mahama 2012). Long-term and long-cycle migration has been defined as a migration duration of two years or more (Findley 1994; Henry et al. 2004), while the term permanent migration has been applied to a migration duration of more than two years (Rademacher-Schulz, Salifu Mahama 2012; Warner et al. 2013b) and more than five years (ANSD 2006).

Moreover, the recent national censuses in Senegal and Mali indicate that internal movements account for the biggest part of movements from the Louga region - which Linguère is part of - and the Mopti region - which includes Bandiagara - and mainly benefit urban areas, like Diourbel, Dakar and Thiès in Senegal and Bamako in Mali (ANSD 2006, 2007; INSTAT 2012a)

In the Sahel, migration differs considerably between men and women. Male migration has a long tradition and is often attributed to the environmental conditions in the region (de Haan et al. 2002; Adepoju 2005; Bakewell, de Haas 2007). The independent migration of unmarried women, however, is considered a more recent phenomenon (Chant 1992a; Tacoli 2002; Ballo 2009; Sieveking, Fauser 2009; Romankiewicz 2012). With respect to temporal migration patterns Findley finds that more women than men migrate for a short-cycle in Mali (Findley 2004), while Henry et al. show in their case study on rainfall and people's first out-migration in Burkina Faso that men - particularly the lower educated - are more likely to engage in short-term migration than women, who usually stay for more than two years (Henry et al. 2004).

With respect to spatial migration patterns, Henry et al.'s study on Burkina Faso finds that international migration is highest among men, while women migrate instead to (rural) areas within the country - but do not distinguish between migration to other African countries and intercontinental migration (Henry et al. 2004). In general, men are considered to be more likely to cross national borders than women (Henry et al. 2004; Chant 1992a). Some studies have shown that the well-educated are more likely to migrate than people with no or lower formal education (Henry et al. 2004; Gray 2011; Morrissey 2012a).

According to relevant literature and case studies, the results of the data analysis are expected to show differences in migration experience between men and women, with a higher share of experience among men. Farmers - including crop producers and livestock breeders - are expected the most likely to migrate because they strongly rely on the natural environment and are the most sensitive to environmental stress. Most of the migration is expected to be circular migration - either short-term or temporary - and to take place within the country at short-distance with a tendency towards urban areas. Since seasonal migration is considered a complementary activity to agriculture during the dry season, one would expect short-term migration to be particularly important for respondents who state agriculture is their main economic activity and that it would apply more to men - particularly those with no or a low formal level of education - than to women.

The commonness of migration - irrespective of environmental sensitivity or social characteristics

The analysis of the survey and the qualitative interviews illustrates that migration is indeed very common in both selected study areas in Mali and Senegal. The majority (81%) of the survey participants in the rural study areas⁴³ have left the region - considered as the area of origin - at least once for at least three months. The share of people with personal migration experience is slightly higher among the Malians⁴⁴ than the Senegalese (86% versus 79%, respectively). Most of the survey participants with migration experience had migrated at least twice (70%), while one third of the respondents had only migrated once. Surprisingly, the analysis of the quantitative data shows no significant differences between the participant's migration experience and people's main economic activity nor by other socio-demographic characteristics, such as the age of the participants or the level of education. With respect to the migration experience of men and women, the survey shows no differences between the migration experience of men and women in the Senegalese study but it does show significant differences between men and women from the Malian study area (see Table 4). In Mali the share of men with migration experience is higher than for women ($\chi^2 = 34.370$, $p < 0.001$, Cramer-V = 0.326).

Table 4: Personal migration experience of men and women in Senegal and Mali.

Country (only rural study areas)			Gender		Total (n=661)
			Men (n=387)	Women (n=274)	
Senegal (n=337)	Migration experience	n	144	121	265
		%	80	78	79
Mali (n=324)	Migration experience	n	194	83	277
		%	94	70	86

Source: Author.

Surprisingly, the analysis of the quantitative data shows no significant differences between the participant's migration experience and their level of education or their sensitivity to environmental stress. Participants with agriculture as a main economic activity

⁴³ The analysis of people's migration experience and the migration destinations only includes the responses of the rural participants. Respondents surveyed in the capitals have been excluded from this analysis because they all have migration experience and would therefore have distorted the results.

⁴⁴ In the analysis the terms "Maliens" and "Senegalese" are used synonymously for the people from the respective study areas that were surveyed or interviewed. Similarly, the terms "Mali" and "Senegal" are used as synonyms for the study areas in the interest of readability.

leave the home community as often as people whose main source of income does not rely on the natural environment. Neither the results of the survey nor the interviews are clear on whether or how migration flows have changed over the last decades - young and elderly participants indicate personal migration experience to an equal share.

When people first left the rural study area, they were on average 18 years old in Senegal and one year older in Mali, with no considerable differences between men and women. However, with respect to their last migration, women were - with an average of 27 years - younger than men who were on average 33 years old at their last migration, with little difference between the two countries.

The survey contains no information on the marital status of the people at the time of migration, but the qualitative interviews indicate that women primarily migrate before marriage. This could explain why they are on average younger than men at their last migration with respect to the survey results. Married women are expected to stay at home and need the approval of the husband for their departure.

Il y a des femmes qui partaient à Bamako, mais ce sont les jeunes filles qui le font pour aller chercher de l'argent. Les femmes mariées ne partent pas. (Group / approx. 14 - 60 / f / Ml / I 07 / L 55-56)⁴⁵

The commonness of migration from both study areas, particularly among young men and women has become obvious during the field work when the author of this study found many villages deserted of young people. A male village elder from Mali summarised this situation in the following words:

Beaucoup de jeunes sont partis. (...) Voilà le village, tout le monde est parti. Si ce ne sont pas les enfants qui sont avec nous, il n'y a plus personne. Tout le monde est parti. (Group / male village elders / Ml / I 09 / L 143-146)

The qualitative interviews suggest that the differences in migration experience between men and women in the Malian study area result from a traditional perception of men's and women's social roles among the Dogon. Young Dogon women are expected to stay with their mothers and to help them with their daily tasks. This perception attributes men the role of breadwinners and considers the migration of women as abnormal as illustrated by the following citation from a Malian man:

⁴⁵ The information for each interview citation includes (name* of the interviewee or group / (estimated) age /sex / country / Interview number / Line of citation). *names changed by author.

Il y a des filles qui voyagent mais pas tout le monde. Parce que pour les filles ce n'est pas normal de faire les aventures. Il faut qu'elle reste a cote de sa maman pour travailler. Mais maintenant il y a aussi de filles que vont aller faire les aventures pour chercher avant qu'elles se marient. (Malik / 34 / m / Ml / I 16 / L 125-127)

Whether and how the perception of the social roles of women and men influences the migration decision is elaborated in more detail below.

The temporal and spatial migration patterns: circular internal migration as the dominant pattern

Based on the definitions of other case studies, this study distinguishes between three different temporal dimensions of migration: 1) short-term migration, including seasonal migration⁴⁶, has been defined as “being absent from the location of origin for three to under ten months from the home community”, 2) temporary migration is defined as “being absent for ten months to under five years”, and 3) permanent migration refers to migration of five years and longer.

Most of the survey participants (77%) state that they had left the study area for the first time only for a certain period of time, either short-term or temporary. Among the Senegalese, the dominant type of migration was short-term migration (40%), while the Malians mostly migrated temporarily, between ten months and five years (46%). A lower share of people migrated for a period of five years or longer (permanently), with a higher percentage in Senegal than in Mali (see Table 5). The analysis by gender shows more relevant differences between men and women in Mali than in Senegal.

The results show no significant differences between the duration of migration and the survey participant's main economic activity nor the level of education⁴⁷.

⁴⁶ In the Sahel, the term seasonal migration usually refers to migration during the dry season when less work in agriculture needs to be done. The qualitative interviews suggest that short-term migration often equals seasonal migration and the quantitative survey results show that most people (60%) left the area for their first migration between September and January and thus after the rainy season that takes place from June to September. However, since the error ratio has been very high with only one third of the survey participants responding to the inquiry about the month of departure, this can only be considered an approximation. Therefore, this study uses the more general term “short-term” migration.

⁴⁷ The survey only inquired about the duration of people's first migration, while people's main economic activity and the level of education refer to the time of the survey conduction. Therefore, the economic activity and the level of education could have been different when people first migrated.

Table 5: Duration of people's first⁴⁸ migration by country in %.

Duration	Country					
	Senegal			Mali		
	Men (n=209)	Women (n=168)	Total (n=377)	Men (n=268)	Women (n=128)	Total (n=396)
Short-term (3 to < 10 months)	43	36	40	49	22	40
Temporary (10 months to < 5 years)	25	31	28	41	54	46
Permanent (5 years and longer)	32	33	33	9	24	14

Source: Author.

The qualitative interviews illustrate that people are strongly attached to their land and migrants interviewed in the capitals confirm their strong ties to the villages. Many male interviewees state that they often return to the home community because their wife or wives and children as well as their parents still live in the village. The family remains in the village due to traditional reasons, such as a strong attachment to the land and the traditional role of the wife/wives to support the mother-in-law, but also for financial reasons because living costs are lower in the rural areas than in the cities. Migrants often consider themselves as living in the village, even though they spend most of the time working and living in the destination areas. Moreover, many interviewees - even those who have been living with their family in the city for decades - express their wish or plan to return to the village for retirement.

With respect to the spatial dimension of migration, this study defines short-distance migration as migration within the administrative department of origin and long-distance migration as migration to any farther destination, within or outside the country. Migration outside the country is further includes migration to neighbouring countries as well as farther destinations in Europe or the USA. Therefore, the author uses the term "sub-regional migration" when referring to migration to neighbouring countries within West Africa. Table 6 illustrates people's destinations for their first and last migration by country and by gender. Most people from both study areas chose a destination within the country for

⁴⁸ The survey provides only information about the duration of people's first migration.

their first and last migration - with little differences between the first and last migration⁴⁹. Of those people who migrated within the country, one-third of the survey participants chose the capital of their home country as the destination of their first and/or last migration. Few people stayed in the region of the study areas - the departments of Linguère and Bandiagara -, while the majority of the participants from both study areas migrated either to other long-distance destinations within the country or to neighbouring countries. Main long-distance destinations within the country were the rural departments of Kaolack, Tambacounda and Matam in Senegal and Ségou or Sikasso in Mali.⁵⁰ While the Senegalese were more likely to migrate to destinations within the country, the Malian respondents often migrated to destinations outside the national border. The share of migrations outside the country differs significantly between migrations in Mali and in Senegal and is much higher in Mali (34% versus 5%). However, migrations from Mali are mainly directed towards neighbouring countries, with the Côte d'Ivoire as main destination.

Table 6: Destinations of the first and last migration by gender and country in %.

Destinations	Country*					
	Senegal			Mali		
	Men (n=239)	Women (n=172)	Total (n=411)	Men (n=337)	Women (n=110)	Total (n=447)
Within the country	93	96	95	59	87	66
- Capital	23	45	32	30	43	33
- Within the region of origin	13	16	14	17	36	22
- Long-distance destinations	57	35	48	12	8	11
Outside the county	7	4	5	41	13	34

Source: Author; *rural areas only⁵¹; migration dataset.

⁴⁹ The survey only inquired about one migration destination for the first and last migration, although migration is certainly often more than a simple linear movement from a location A to a location B and might include intermediate stops (Doevenspeck 2005; Schapendonk 2010). The qualitative interview thus aimed at giving more detailed information about people's migration history.

⁵⁰ It is difficult to consider the destinations as rural or urban because administrative regions are often named after their biggest cities. Although asked for the name of the city, town or village, it is not clear if respondents migrated to the city – which would be considered as urban – or named the city synonymously for a region that often is considered as a rural area.

⁵¹ The analysis of the migration destinations include only people surveyed in the rural areas – since otherwise the countries' capitals would have been overrepresented and would distort the findings.

The migration destinations differ not only by country but also between men and women within and between the two study areas. The capitals were the main destination for women's migrations from both study areas, with very few women migrating across national borders. The second important destination for the Senegalese women were long-distance destinations within the country, while the Malian women were more likely to migrate within the region of origin. Men, on the contrary, often migrated to long-distance destinations. While Senegalese men migrated primarily within the country, Malian men moved primarily to destinations outside the country (see Table 6).

With respect to the main economic activity of the participants and the destination of migrations, the results surprisingly show no significant differences for the Senegalese participants. In Mali, farmers more often left the country than people with another economic activity (41% versus 10%), who preferred to migrate to the capital or to a short-distance destination within the country ($\chi^2 = 37.006$, $p < 0.001$, Cramer-V = 0.288).

The survey data on recent migrations - between the year 2000 and 2012 - indicates an increasing importance of the capitals as migration destination for men and women from both study areas. For the Senegalese, urban destinations, such as Dakar, Thiès and Mbour, seem to become more important compared to the traditional rural destination. In Mali, migration destinations outside the country decreased slightly during the last decade, which might have been influenced by the civil war and political crisis in the Cote d'Ivoire, the main destination outside the country.

The qualitative interviews suggest that international migration to Europe is rather uncommon in Mali due to the related high costs. In Senegal, the interviews and the field work suggest that international migration to Europe or the USA is restricted to the members of a few villages and strongly depends on their social networks. According to the Senegalese interviewees, migration from the study area to Europe started in the 1980s, but has decreased during the last years as a result of the financial crisis in Europe and the related difficulties in finding employment as well as the more restrictive migration policies of "Western" countries.

Moreover, the international return migrants interviewed in Senegal concordantly explain that they had "suffered" during their migration and that they therefore strongly discouraged other household and community member to leave the continent.

The interviews with elder men illustrate very well how migration destinations have changed over the last decades. The Senegalese explain that they had migrated to rural areas, such as Saloum, Kaolak, Fouta, Matam or Podor because international migration

had not been accessible at that time, while the Malians explain that they used to migrate to Ghana in the early 1960s and later directed their migration primarily to the Cote d'Ivoire due to better employment opportunities.

Many factors influence the choice of the migration destination. The survey illustrates that social networks play a crucial role for the choice of the destination of people's first migration from the two study areas. The majority of the people (82%) chose their first migration destination because they either had a friend or family member in the place at that time or knew somebody who had been there before. Social networks, however, were more relevant for the choice of the destination for the Senegalese than for the Malians (50% versus 32%, respectively). Malian respondents often indicate that the destination was chosen by chance (20% for Malians versus 3% for Senegalese), while the Senegalese chose a destination more often due to better professional and/or educational perspectives (40% for the Senegalese versus 11% for the Malians). Additionally, 10% of the respondents chose their migration destination because they wanted to get to know the city.

Considering gender, women more often chose their first destination by social networks than men (90% for women versus 73% for men), while men more often selected a destination by professional or educational perspectives (33% for men versus 14% for women), with little differences between Mali and Senegal. With respect to the level of education, the well-educated indicated to a higher percentage than people with no or a low level of education that they chose the destination for better education perspectives, while they indicated to a lower percentage that better professional perspectives are the reason for the choice of destination. No significant differences could be found for farmers and non-farmers, although the social networks played a slightly lower role for the choice of destination for farmers.

The qualitative interviews show that social networks are not only important for the choice of destinations for people's first migration, but also for the choice of migration destinations in general. This is because networks facilitate the search for employment and accommodation. Many interviewees stated to have joined a family or community member at the migration destination or that younger family and community members had joined them at the destination; this is illustrated by the following citation of Samba, a migrant in Dakar.

Moi, je suis parti le premier [de la famille, author]. Les autres [petits frères, author] mes ont suivi à Dakar. Nous sommes dans le même boulot. (...) Avant de moi, il y a des autres gens qui ont quitté le village, mais ici de notre famille, ce moi qui

ai quitté le premier. (...) J'avais le petit frère de mon père qu'a été déjà là-bas et j'ai lui rejoindre. (Samba / 44 / m/ Sn - Dakar / I 01 / L 29f / 81f / 104f)

Moreover, the information on economic opportunities, such as the access to jobs and the expected profit, in the destination area provided by previous migrants decisively influences the choice of the destination.

J'ai choisi Abidjan parce qu'on gagne plus à Abidjan qu'à Bamako. (...) Je l'ai entendu des anciens qui sont partis, des anciens qui font des allers-retours. C'est pour cela que j'ai choisi Abidjan pour aller voir. (Koala / est. 35 / m / Ml / I 06 / L 8-13)

The findings on the linkages between the spatial and temporal migration patterns (see below) suggest that social networks or expected economic profits influence the migration decision rather than the duration.

When linking the spatial and temporal migration pattern, the findings illustrate that short-term migrations in Senegal were mainly directed to long-distance destinations within the country and in Mali to the capital and to neighbouring countries rather than to destination within the region of origin (see Table 7). Malians who migrated to a destination outside the country surprisingly stayed for short-term, temporary and permanent amounts of time to a similar percentage.

Table 7: Destinations and duration for the first migration by in %.

Country*	Destination	Duration			Total
		Short-term	Temporary	Permanent	
Senegal (n=259)	Within the country	98	95	91	95
	- Capital	25	35	30	29
	- Within the region of origin	12	16	25	16
	- Long-distance destinations	61	44	37	51
	Outside the country	2	5	9	5
Mali (n=277)	Within the country	71	68	72	70
	- Capital	41	41	0	34
	- Within the region of origin	24	13	68	27
	- Long-distance destinations	6	14	4	9
	Outside the country	29	32	28	30

Source: Author; *rural areas only.

In sum, migration is very common in both study areas - irrespective of the environmental sensitivity of the people and social characteristics, such as the level of education and gender - except for Mali where migration is less common for women. This supports the view on migration as the norm rather than the exception but does not yet prove that migration is indeed an adaptation strategy or livelihood activity.

For Mali, women were expected to have fewer personal migration experiences than men, but the share still seems surprisingly high, compared to findings of earlier studies on female migration from the Dogon country and the national statistical data - which shows that only 14% of the migrants from the Mopti region are women (INSTAT 2012a: 22). Although women's migration experience includes the traditional movement of married women to their husbands' compound, further analysis of the migration patterns and the migration motives - at least partly - rejects this explanation.

People from both study areas migrate predominantly circularly and maintain strong relations to their home community - which is in line with the results of earlier studies. The dominance of circular migration suggests that migration is a complementary activity to agriculture. However, only in Mali were farmers more likely to migrate for a short term than non-farmers, which suggests that circular migration is not necessarily related to the seasonality of rain and agriculture. Moreover, in contrast to Henry et al.'s study, the findings show no influence of the level of education on the duration of the migration and, with respect to gender, only women from Mali were more likely to migrate for a longer period than men.

The findings for the destinations of migration match the dominant view in the literature and the national censuses. Most of the migrations from both study areas take place within the countries - with recent migration mainly directed towards the capitals and urban areas. Migration across national borders was only relevant for Malian men who migrated primarily to the Côte d'Ivoire. While long-distance migrations - even to neighbouring countries - seem to be an available option for many migrants, migration to other continents seemed to be out of reach for most people.

Although one would presume a longer duration for a farther destination, in general the findings do not show a clear relationship between the duration and destination of migration. On the contrary, one third of the Malians who left the country only stayed for a short-term period - and farmers migrated more often to destinations outside the country than non-farmers. This is surprising considering the time and cost related to the journey: a bus

journey from Bandiagara, in the Malian study area to Abidjan - where most people migrate to - takes about two days and costs about 30,000 XOF - one month's salary. This suggests the migration patterns, both spatial and temporal patterns, are influenced not only by the conditions in the area of origin but also by a combination of lower risk provided by social networks and possible economic benefits in the receiving areas, as it has been suggested in migration theory and case studies (Massey et al. 1993; Schmidt-Verkerk 2011). In addition, both the interviews and the literature on migration in West Africa suggest that migration destinations constantly changed and change over time. Improvements of transport infrastructure, economic growth and employment opportunities influence the choice of destination in a positive way, while conflicts and political instability have a negative effect on the choice of destination (Bakewell, de Haas 2007).

Although the Senegal is known as a transit country for migrants from Senegal and West Africa (ANSD 2009; Fall 2003; Adepoju 2005; Some 2009; van der Land, Fourier 2012), only a very small number of the rural Senegalese confirmed international migration. International migrants might be underrepresented in the survey due to the methods used and because they are often away for a longer duration than other migrants and thus more difficult to capture. A question in the survey about the migration destinations of other family members and the qualitative interviews suggest, however, that international migration is more common among the Senegalese than the Malians. Migration to Europe seems to decrease and is restricted to the members of few villages. International migration might still be a dream for some young men in Senegal - as it has been reported in the literature (e.g. Lo 2008: 414; Tacoli 2011c). However, stories of failed migration, awareness campaigns about the risks and costs of illegal migration, as well as a strong discouragement from those who have succeeded to arrive in Europe, made it less desirable. The low number of migrants from both study areas to Europe thus opposes the often-recited expected numbers of millions of environmental refugees who will enter "Fortress Europe" as a consequence of future climate and environmental change.

Whether the short-term and temporary migration can be considered an adaptation strategy to the environmental conditions in the region or not depends on the migration motives and how environmental drivers influence the spatial and temporal migration patterns, which will be analysed later on. Before the analysis of people's motives to migrate or to stay, the next section will focus on the migration decision-making.

6.2.2 *The migration decisions: Not always a strategic household decision*

The current literature on the environment-migration nexus regards out-migration from areas affected by environmental stress as a strategic household decision to diversify the household's income sources in order to adapt to actual and future environmental stress (IOM 2009; Black et al. 2011b; Pigué et al. 2011a; McLeman 2014). Particularly in African countries, migration is usually considered a family affair because it is closely related to financial support and remittances (van Dijk et al. 2001: 23).

Critics of the household approaches, however, have argued since the 1990s that the focus on households neglects intra-household dynamics and unequal power relations within a household or a community along different characteristics, such as age and gender. With respect to migration, household members with less power might therefore either be put under pressure to migrate or be excluded from migration (de Haas, Fokkema 2010). Particularly, gender has been proven to have a considerable effect on migration and the migration decision (Chant 1992b). Studies on migration in Mali have illustrated that men and particularly the head of the household make the decisions related to migration, while female migration has been primarily considered as co-migration with their husbands (David 1995; Petit 1997; Sow et al. 2014). Moreover, the traditional perceptions of social gender roles and a negative social image of independent female migrants in West Africa might determine the migration decision of women in a negative way - as has been suggested in literature (e.g. Findley 1994; Petit 1997; Hertrich, Lesclingand 2013; Sow et al. 2014).

In order to better understand the migration decision, the survey inquired about who influenced people's first decision to migrate the most. The person who most influenced people's first migration decision differs strongly between the two study areas ($\chi^2 = 66.054$, $p < 0.001$, Cramer-V = 0.291) and even more between men and women ($\chi^2 = 169.609$, $p < 0.001$, Cramer-V = 0.467).

Most people's first migration decision has been influenced by somebody (see Table 8). For almost half of the women and 42% of the men, one or both parents were the main influence in the decision to migrate. Particularly for women from Senegal, the first decision to migrate was influenced by their partner, who played a much lower role for the Malian female participants. On the contrary, men's migration was hardly influenced by their wives. The category "others" includes other family members, such as brothers and sisters, aunts and uncles and friends. The influence of friends was only relevant for the Malians.

More than one third of the people, however, indicated that nobody had influenced their first decision to migrate. Almost half of the men (45%) state that nobody influenced their decision for the first migration, while this applies only to 21% of the women. Respondents from Mali agree to a higher percentage that nobody else has influenced their decision to migrate than the Senegalese (43% versus 24%), while the Senegalese instead indicate that their father and/or mother had influenced their migration decision. The high percentage of respondents who agreed that “nobody influenced the first migration decision” suggests that the decision to migrate is not always a household decision, but often an individual decision, particularly in Mali.

Table 8: Persons who most influenced people’s first migration decision by country and gender in %.

Person who most influenced the first decision to migrate	Country					
	Senegal			Mali		
	Men (n=211)	Women (n=170)	Total (n=381)	Men (n=267)	Women (n=130)	Total (n=397)
Influenced by:	61	92	75	49	66	54
- Father and/or mother	50	49	50	33	47	37
- Partner	1	37	17	0	12	4
- Others	10	6	8	16	7	13
Individual decision	39	8	25	51	34	46

Source: Author.

People with agriculture as their main economic activity more often decide individually about their migration (44%) than people with another non-agricultural economic activity (28%) in both countries. In contrast, migration is to a higher extent an individual decision for people (39%) with no formal education compared to those with a high level of education (18%). Age had no significant effects. Considering only the most recent migrations from the year 2000 until 2012, migration as an individual decision tends to be more important in Mali, particularly for women.

The qualitative interviews illustrate that young people had consulted their parents or the household before leaving for the first time, while others only informed their parents and other family members after having made the decision by themselves. If other household members are consulted or informed beforehand, young men usually consult their fathers,

while young women consult their mothers about their decision to migrate. When the parents (father, mother or both) agreed to their decision, they often took care of the transport costs and provided their son or daughter with money and advice. However, parents do not always agree with their sons or daughters decision to migrate. The following citations of a young man from Senegal illustrates that a strong hierarchy along age makes migration against the will of the head of the household almost impossible.

La première tentative [de migrer, author] c'était en 1992. L'année où je faisais la 6ième. Mon frère était en Côte d'Ivoire et je dis, regarde, moi, je vais sortir d'ici. Mais mon frère m'a dit il faut étudier et ma mère m'a dit: Tu es très jeune encore pour sortir, il faut étudier. Mais en 1997 j'ai abandonné l'école, comme mon frère avait en 1998 (...). Mais maintenant même ici sont les parents que décident. Les parents ont été d'accord que je partais. (Moustapha / 34 / m / Sn - Italy / L 144-148)

Several young interviewees both, men and women, state that they preferred not to inform their parents or other family members about their migration plans, because they assumed they would not allow it. Since migrating despite the will of the father would be a serious affront, young people often prefer not to inform their parents about their migration plans. Some even admitted to have stolen money from the parents' pockets to be able to pay for the transport.

A l'époque-là [aux années 1960, author], il n'y avait pas / puisque les parents n'acceptaient pas, donc il faut les voler pour aller. (Oumar / est. 70 / m / MI / I 15 / L 104-105)

J'ai planifié. J'ai entendu parler de Bamako et j'ai commencé progressivement à planifier. (...) En ce temps-là, il n'y avait pas d'argent pour aller. Donc je suis allée voler l'argent de ma mère. (Fatoumata / est. 20 / f / MI / I 08 / L 48-52)

Particularly young women from Mali often migrate or escape secretly without informing the household about their migration because the independent migration of women often is not well respected and, in some villages, even prohibited. This is because female migration does not match with the traditional role of women in most villages. In Senegal, however, female migration seems to be fairly accepted.

Je suis partie clandestinement, mais ma maman en était informée. (...) En général, c'est mieux de ne pas dire au père que tu pars, car il refuse et si tu pars, quand il dit non, c'est un malheur que tu vas rencontrer. (...) Certaines le disent à leur mère

et d'autres à personne. (...) En général, ce sont les mamans qui cherchent [l'argent pour le voyage, author] et c'est pour cela que beaucoup de gens le disent à leur mère. (Oumu / 22 / f / Ml / I 17 / L 22,154-161)

The interviews in the Malian study areas suggest not only that female migration is not well respected but also that the fathers cannot accept the migration of their unmarried daughters due to cultural and social traditional norms, as women are expected to take care of the housework and the children.

L'exode des femmes, des filles, n'est pas notre souhait. Dans la coutume, une fille doit toujours rester auprès de sa mère, apprendre à travailler à la maison, à travailler, à connaître le foyer. (Abdulai / est. 70 / m / Ml / I 20 / L 85-87)

In order to enforce the traditional roles, the male villagers of some Malian villages, implemented several sanctions to prevent young women from migrating. They imposed punishments, such as high monetary fines for the girls' families in case of migration, bribed the border posts for not letting unmarried girls pass or for putting them into prison to frighten them. Moreover, brothers or other male community members were charged to find girls in migration and force them back to the village⁵². Some villages indicate, however, that they had "released" (in French: "libéré") the women from the ban because it did not prevent them from leaving and was justified by explaining that women needed to migrate due to a lack of financial means.

In sum, the migration decision is not always a household decision. On the contrary, it is often an individual decision. A considerable percentage of the people (33%) has decided to migrate all by themselves without being influenced by anybody else and can be interpreted as an individual decision. In Mali, this applies even to 43%.

In addition, both, quantitative and qualitative interviews illustrate an unequal distribution of power within the household and the community - with elder men as the most powerful members - with respect to the migration decision. The migration of married men and women is usually only determined by the husband. In Mali, young girls are particularly disadvantaged due to the restrictions of female migration imposed by male villagers and the negative social image of female migration. The restrictions against the migration of

⁵² According to those interviewed, the restrictions against female migration are justified for two reasons: 1) by protecting the young girls from the dangers in the cities due to their "vulnerable nature", and 2) by preventing the problems and shame that female migration can pose on the family or the village in case the traditionally-espoused women return pregnant or with a child.

women in parts of the Dogon country might explain why Malian women state more often than Senegalese women in the survey that their decision to migrate had not been influenced by anybody. Moreover, the interviews suggest that young people often migrate secretly (without informing the household) to elude the influence of the traditional authority of the parents, other household members or the community and against the will of the head of the household or the community. Thus, migration can constitute a rebellion against the will of the household head and the narrow traditional hierarchies and norms of both societies.

For the young Dogon women, Petit had already stated in the 1990s that migration had become “un signe de contestation envers l'autorité des aînés“ (Petit 1997: 539) and that the labour migration of women “met en péril les rapports hiérarchiques hommes/femmes au sein du couple, de la famille, et la migration des jeunes, quant à elle, met en danger la perpétuation de la domination des aînés sur les cadets” (Petit 1997: 539).

The secret migration of both young men and women might eventually weaken or change the traditional social norms and unequal power relations. The migration of some women despite heavy constraints has already helped to abolish the ban against female migration in some villages and might contribute to a higher acceptance of female migration in the future. However, people who secretly migrate are particularly at risk because they usually do not rely on social networks and have little (financial) support. Particularly, young girls with no work and no place to stay are likely to be exposed to risks and are easy targets for crimes, such as exploitation and sexual abuse, in the destination areas.

The focus on the household as the main unit of analysis in the analysis of the migration decision neglects these power inequalities within the household and the community and assumes a commonly-agreed motive - which mainly economically favours the household - for the migrant household members. Davies, however, has already noted in her study on adaptable livelihoods in Mali that “older members of households consistently argued that the decision to migrate was no longer a collective decision, implying that reciprocal links (certainly in terms of migrating to send back remittances) are under strain and that further research is needed if migration is to be a reliable indicator of food stress” (Davies 1996: 75). This - and the relatively large share of people who individually decide to migrate - suggests that the migration motives of the household members - particularly in Mali - might no longer be automatically related to environmental change and food insecurity; instead, migration may be occurring for other reasons. Although an individual migration decision can still be intended to ensure the household's food security and to improve the

family's well-being, it seems to be more reasonable that people who migrate to support the household's food security and livelihoods discuss this with other household members.

6.3 People's motives to stay and to migrate

6.3.1 Staying: not a result of lacking financial means but determined by preference and social norms

In the environment-migration research, the early studies primarily referred to migration as forced migration, while staying was considered as desirable. As a result, these studies regarded migrants as the most vulnerable people to environmental stress. In current studies on the environment-migration nexus, the reverse applies. Migrants are presented in a more positive light as people who actively adapt to climate and environmental change, while those who are not able to migrate are regarded as the most vulnerable (de Haan 1999; Hugo 2008; Tacoli 2011c; Schmidt-Verkerk 2011). People who do not have the ability to move away from areas affected by environmental stress have therefore been labelled as "trapped populations" (Black et al. 2011b; Foresight 2011; Adger, Adams 2013; Black et al. 2013; Black, Collyer 2014).

People's migration decision is considered to be influenced by people's capital - particularly financial and social capital - which is why poor people are often assumed not to be able to afford migration and to be the least capable of migrating in order to adapt to environmental changes (Waddington, Sabates-Wheeler 2003; Van Hear 2004; USAID 2010; Adger, Adams 2013; Fall, Cissé 2013). Although the current literature on the environment-migration nexus tends to consider those who are not able to migrate as the most vulnerable to environmental stress, there is little empirical evidence that poor people are forced to stay in areas of fragile environments.

Studies have identified several barriers to migration, such as the lack of education in Burkina Faso, Ethiopia and Uganda and Kenya (Henry et al. 2004; Gray 2011; Morrissey 2012a), the high cost of living in urban areas (Morrissey 2012a), attachment to land (Afifi 2011; Morrissey 2012a) and social pressure to take responsibility for other family members (Schmidt-Verkerk 2011). However, most of these identified "barriers" must not necessarily be related to a need to stay but might instead indicate the choice to stay. The few studies that have considered people's reasons for staying mainly find that people often prefer not to migrate for several reasons. People explain that they stay because they believe that migration is not a beneficial alternative to staying at home, because they feel responsible for other family members, because they feel that the expected financial gains

do not outweigh the social costs of leaving family and friends (Schmidt-Verkerk 2011) or because they are highly attached to the place and value the ecosystem services provided by the environment (Adams, Adger 2013; Adger, Adams 2013). However, most case studies on the environment-migration nexus even do not include people's reasons to stay in their analysis. While the current conceptual approaches in the environment-migration research distinguish between people who choose to stay and those who are not able to stay, case studies usually do not make this crucial distinction. Individual characteristics, such as age, gender, education, structural conditions and social norms, and people's assets have all been shown to shape the decision to migrate or to stay.

As described above, most people in both study areas have personal migration experience - only 19% (n = 112) of the rural survey participants had never left the study areas for at least three months. The share of men and women who have never left the study areas is nearly equally distributed for Senegal (men n=33, women n=22), but is much lower for men than for women in Mali (men n=12, women n=35). Thus, the number of cases is too small to provide a reasonable analysis of the data by country and gender.

People's reasons to stay in their home community are manifold and, while some respondents suggest that staying is a choice, others indicate that migrating may not be an option. Malian respondents mainly indicate that the parents or village community does not agree or that they stay due to responsibility within the family - both reasons suggest that to stay is not a choice but rather an outcome of social norms (see Table 9). However, a fairly high percentage from Mali also agrees to reasons that imply a voluntary character of staying, such as "never thought about leaving" and "did not want to leave". The Senegalese mainly indicate that they have relevant activities and enough work to do in the area as well as social responsibilities. However, as in Mali, the Senegalese also often indicate that they "did not want to leave" and "never thought about leaving".

The category "Other" includes, for instance, that people did not migrate because they went to school, but also people who did "not [have] enough money to leave". However, only very few people - all from Senegale - (n = 4) responded that they had "not enough money to leave", which indicates that the financial situation does not play an important role in the "decision" to stay in the study areas.

Table 9: People's motives for staying by country.

Reasons to stay	Country			
	Senegal (n=72)		Mali (n=47)	
	n	%	n	%
Family responsibility (take care of parents; only son/daughter)	20	31	15	32
Did not want to leave	19	29	9	19
Never thought about leaving	16	25	14	30
Work or activity in the areas (a lot of work to do here, relevant position)	27	57	4	8
No migration culture in family	15	23	10	21
Parents or village community does not agree	14	22	19	40
Other	18	28	12	26

Source: Author; multiple answers possible.

The findings show no significant differences in the motives for staying for farmers and non-farmers, except for the motive “never thought about leaving”, which applies more often to non-farmers (39% versus 18%). People who agree with “have a relevant position or a lot of work in the area”, are to an equal share farmers and non-farmers. These positions included “village chief”, a religious position (e.g. Imam), or other positions with importance for the village, such as employees of health centres or teachers. The number of cases is too small to conduct an analysis by the different levels of education, but the analysis by people with and without formal education found no significant differences for the reasons to stay. With respect to age, elder people responded slightly more often than the younger age groups to “have a relevant position in the village” and that they “did not want to leave”.

Although a meaningful comprehensive analysis of the data by country and gender is not feasible, the findings with relatively high differences between men and women to stay shall be highlighted. Women in both study areas indicated with a much higher agreement than men that they had “no migration culture” and that the “parents and/or the community does not agree” with migration for them. The first applies to 28% of the Senegalese and 27% of the Malian women, while the latter applies to 34% of the Senegalese and 46% of the Malian women. The percentage of men from both study areas is very low to both of these response categories. In addition, Malian women often agree to the category “never thought about leaving” (37%). Men in Senegal, agree much more often than women that

they have a relevant position in the village or a lot of work to do. The number of cases for Malian men is too small to make reliable statements.

The main reasons women give to stay suggest that social norms do not favour female migration, which also explains the negative perception of female migration and the heavy constraints that Dogon women often face with regard to the migration - illustrated in the previous section. Although some young women might favour staying in the village, they often do not have the capability to decide between leaving and staying. While some young women rebel against migration restrictions by secretly escaping from the village, others do not because they fear the consequences of their action. The following citation of a young Malian woman illustrates that women often do not agree with the restrictions of their migration imposed by the parents and/or the village community.

Ça [d'interdire aux femmes de partir, author] ne pourra pas se faire. Les filles doivent venir à Bamako chercher de l'argent et retourner. Ce n'est pas bien de garder les filles à la maison. (...) Les filles doivent venir à Bamako pour chercher de l'argent et retourner. (...) parce que quand on est village, il y a des mois dans lesquelles, il n'y a rien à faire. Il n'y a pas de travail là-bas. (Fatima / 22 / f / Ml - Bko / I 28 / L 158-161, 168-169)

Moreover, although most people assess migration as positive, negative aspects were also mentioned, including being far away from the family, having to working hard, having adapt to different habits and environments. These reasons might all keep people from migrating or strengthen their preference for staying.

In sum, people have different reasons to stay in an area affected by environmental changes with different degrees of voluntariness. Very few people indicate that they stayed due to a lack of financial means - which contrasts with the current narratives in the environment-migration nexus literature that state that poor people are often not able to afford migration - and suggests that people who stay in the two areas are not very likely to be “trapped” by environmental changes. To the contrary, the interviews show that many people will borrow or even steal the money for migration in order to realize it, if necessary.

Both men and women - but particularly men - often indicate that they did not want to leave or never thought about leaving the village, which suggests that people either actively choose to stay or never actively wanted to migrate. In general, however, the degree of voluntariness of the reasons to stay in the home community differ considerably between men and women. Men's main reasons to stay imply choice and voluntary action

rather than a need to stay. Reasons, such as a lot of work to do or having a relevant position in the village, enable people to stay and might also constitute a socially-accepted excuse not to migrate. The high agreement by women that the parents and village community do not agree that they should migrate implies an involuntary character of staying. Social norms - which are often shaped by the unequal power relations by age and gender - play a role in the “decision” to migrate for women with respect to the lack of a migration culture among women, and for both men and women with respect to family responsibilities. Both reasons might indicate an involuntary or a voluntary character of staying, depending on people’s situations and preferences.

The different degrees of voluntariness related to the responses suggest that migrating is not an available option for all people - particularly for women. People often do not have the capability to choose freely between migrating and staying. However, in contrast to the literature, the findings suggest that the choice between migrating and staying in the two study areas seems to be determined by (traditional) social norms rather than by the environmental conditions and financial assets. On the one hand, people who are hindered in their ability to migrate for reasons other than environmental change might still be the most vulnerable to environmental stress because they have to stay in an area at risk with few options to diversify their income sources. On the other hand, (traditional) social norms, which restrict the choice for migration of some of their members, usually also restrict the choice of staying for others. For example, the migration of men is often expected to ensure the household’s food security, particularly when women are expected to stay and to take care of the household. However, people who do not have the capability to choose between migrating and staying are certainly disadvantaged at a personal level because they are less likely to improve their individual well-being and to fulfil their individual aspirations and often highly depend on other household members.

These findings illustrate that it is important to include people’s reasons to stay in the analysis of the environment-migration nexus and to distinguish between whether people want or need to stay in order to assess whether people are “trapped” in an area affected by environmental stress.

6.3.2 People's migrations motives: Economic reasons as the main drivers of migration

There is currently a consensus among environment-migration scholars that migration is multi-causal and that the decision to migrate is usually influenced not only by environmental drivers but also by cultural, economic, political and social aspects (e.g. Adamo 2009; Laczko, Aghazarm 2009b; Piguet et al. 2011a; Hummel et al. 2012; Faist 2013; McLeman 2014). Case studies have shown that social and individual characteristics also influence the migration from areas affected by environmental change and often even have a stronger effect on migration than environmental factors (see Chapter 2.3). The terms “environmentally-induced migration” or “environmental migrant”, however, imply that environmental factors are the main determinants for people’s migration.

The findings of this thesis so far have only illustrated that migration in the study areas is common and primarily circular and domestic. However, this does not necessarily indicate whether or not, for whom and to what extent the migration is primarily influenced by environmental factors - and can thus be considered an adaptation strategy to environmental stress. In order to get more detailed information on this, the survey for this thesis focussed on people’s migration motives in a general manner in order to get more detailed information about the weight of environmental factors in the migration decision. People were asked for their main and further migration motives for their first and last migration, but instead of focussing on environmental causes in particular, response categories that relate to environmental factors had been integrated among others. Chapter 5.2 provides more information on the methods and operationalisation.

The literature suggest that there are considerable differences in migration motives between men and women in general as well as for migration from areas affected by environmental change (Chant 1992b; Wright 1995; de Haan 2000; Carling 2005; Dugbazah 2012). Several studies on migration in the Sahel find that men migrate primarily for economic reasons while women instead migrate for marriage or other family reasons instead (Findley 1994; Ezra, Kiros 2001; de Haan et al. 2002; Henry et al. 2004; Hertrich, Lesclingand 2013). Migration as a response to negative environmental factors is thus primarily attributed to men and usually linked to the need to sustain the household food security and to generate income to compensate for the lack of financial means and poor yields (Petit 1997; de Haan et al. 2002). Earlier studies on female migration from rural Mali found no (Findley 1994) or very little (less than 10%) (Petit 1997) agreement to economic reasons for women’s migration.

The roots for the different migration motives are assumed to be rooted in men's traditionally more prominent role in the generation of income (Chant 1992a). Findley for example, concludes in her study on migration and drought in Mali that women do not attribute their own migration to economic reasons due to the traditional assignment of gender roles (Findley 1994). According to Findley, this "would be considered dishonourable for her male kin, since the husband is expected to support his wife. Therefore, both she and they will describe her migration as visiting family or for other noneconomic reasons, like seeking health care" (Findley 1994: 542). With respect to the migration of Dogon women, the reasons for migration seem to have changed: while an earlier study found that Dogon women do not migrate to acquire their dowry like other ethnicities, such as the Bwa or the Fulani (Petit 1997), recent studies find that Dogon women primarily migrate to prepare their marriage (de Haan et al. 2002; Mansfeld 2007; Sieveking, Fauser 2009; Hertrich, Lesclingand 2013).

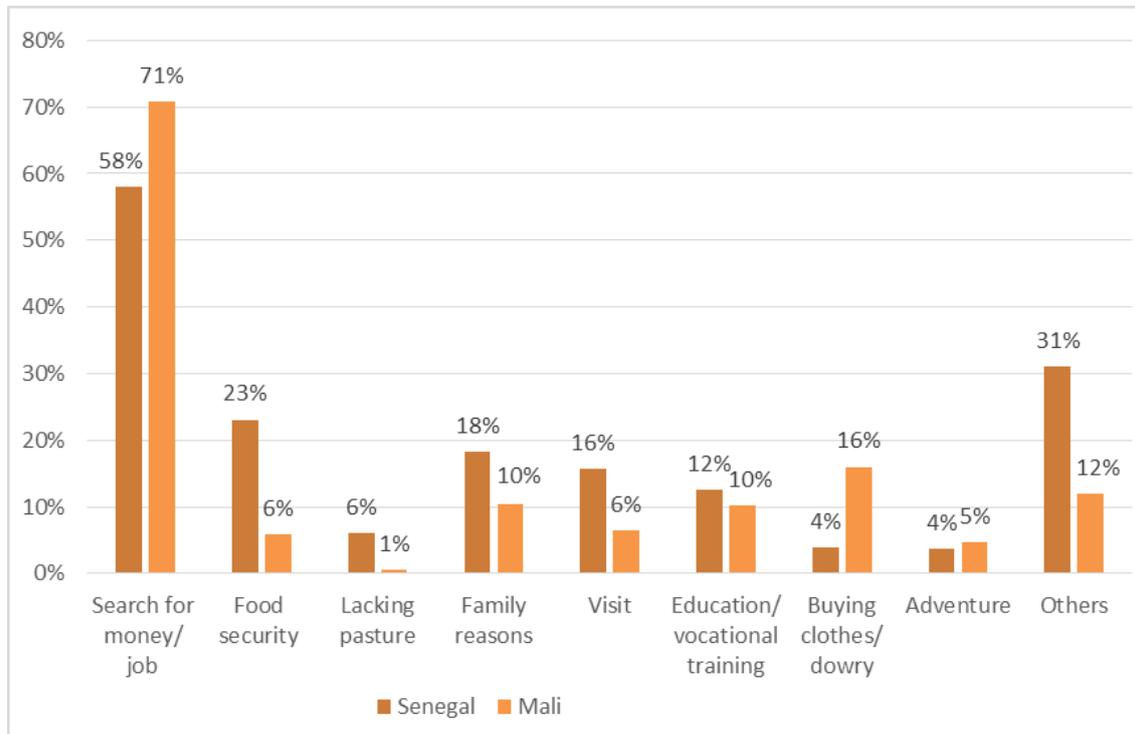
Considering the findings of previous case studies, one would expect the migration motives from the two selected study areas to be manifold with considerable differences between men and women. Men are expected to migrate primarily for economic and environmental reasons, while women are expected to migrate primarily for family reasons or dowry instead.

The most important *main* migration motive for the survey participant's first and last migration⁵³ is the "search for money and/or job opportunities" (65%) (French: "chercher d'argent" and/or "aller chercher"). The economic motive for migration is far ahead of other motives, with 58% of the migration applied to this motive in Senegal and 71% in Mali (see Figure 24). Environmental impact factors on migration have been operationalised by several response items summarized by the category "food security". The motive "food security" includes the response items insufficient rainfall, unsatisfying soil fertility, lacking access to land and food insufficiency. "Food security" as a main migration motive applies to 15% of the moves, with a much higher percentage among the Senegalese than the Malians (23% versus 6%). The majority of the people who agree to "food security" as a main migration motive mainly indicate that the yields had been insufficient to nourish the family and state to a lower extent a lack of rainfall; the other response categories subordinated by the category food security are of low importance. The response item

⁵³ The motives do not differ significantly between the first and last migration and therefore, have been combined.

“lacking pasture” is also an indicator for environmental factors but played a very small role (4%) as main migration motive. The category “others” includes migration motives with little response, such as tradition, health, tax, conflict, lacking access to water and religious reasons.

Figure 24: Main migration motives of people’s first and last migration by country.



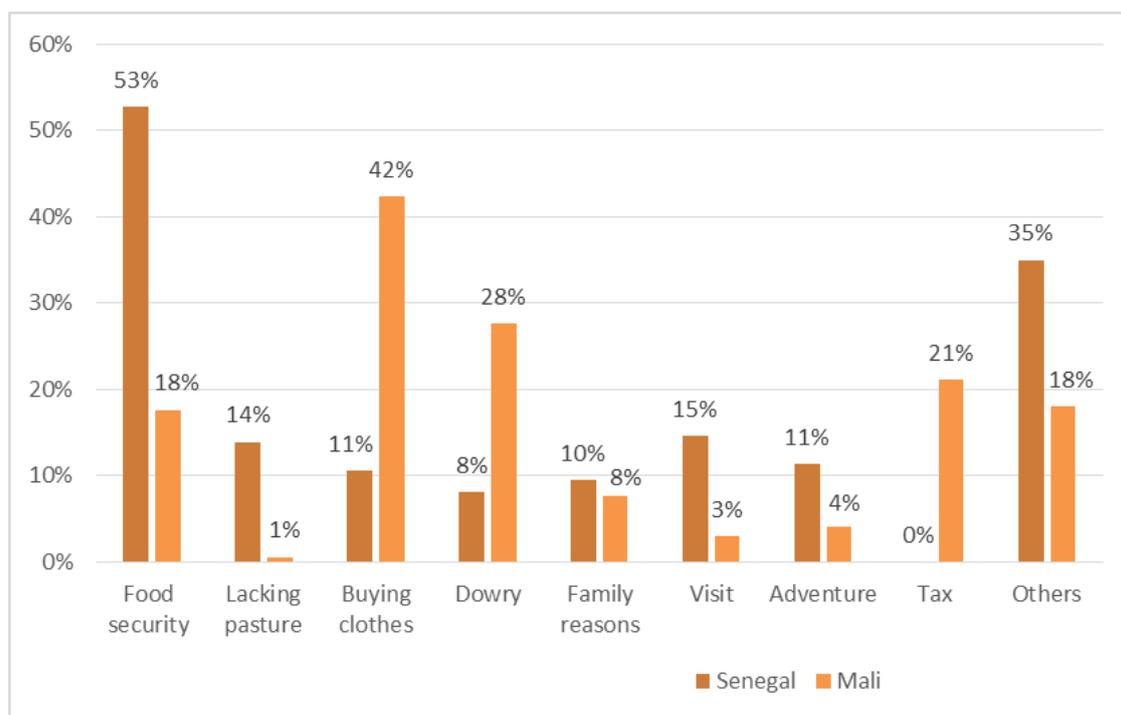
Source: Author; Senegal n=641; Mali n=684; multiple answer possible; migration dataset.

The inquiry of people’s *further* migration motives aimed at providing a more detailed picture on the variety of reasons that motivate people to migrate and at detecting “hidden” environmental reasons for their migration.⁵⁴ People’s further migration motives differ from the main motives and vary much more between the Malians and Senegalese than the main motives of migration. However, further migration motives were only applied to one third of the migrations. “Food security” is the most important further motive for 36% of people’s migrations with a further migration motive - which applies to only 13% of the total migrations. However, it is much more relevant for the Senegalese than for the Malians (53% versus 18%) (see Figure 25). The majority of the people who agree to “food security” as a further migration motive mainly state - as when food security was selected as a main migration motive - that the yields had been insufficient to nourish the family and to a lower extent indicate a lack of rain.

⁵⁴ For methodical considerations about the inquiry of main and further migration motives are explained in more detail in chapter 5.2.

For migrations from Mali, “buying clothes” (42% versus 11%), “dowry” (28% versus 8%) and “tax” (21% versus 0%) are the most important further migration motives, which hardly apply for the Senegalese. Further motives that are more important for the Senegalese migrations than for the Malians are - besides “food security” - “visits” (15% versus 3%) and “lacking pasture” (14% versus 1%).

Figure 25: Further migration motives of first and last migration by country.



Source: Author; Senegal n=237; Mali n=179; multiple answer possible; migration dataset.

With respect to the individual characteristics of the migrants and their migration motives, the findings illustrate that formal schooling influences people’s migration motives⁵⁵. Most respondents with no formal education or only primary education (69% and 70%) list the “search for money/job opportunities” as one of their main objectives for their first and last migration, while the highly-educated (secondary level and higher) expressed far less agreement to this motive (26%). The well-educated indicate “education and/or vocational training” as one of their main objectives for migration instead (55%) which applies only to 9% of the participants with a primary education and to 6% with no formal education.

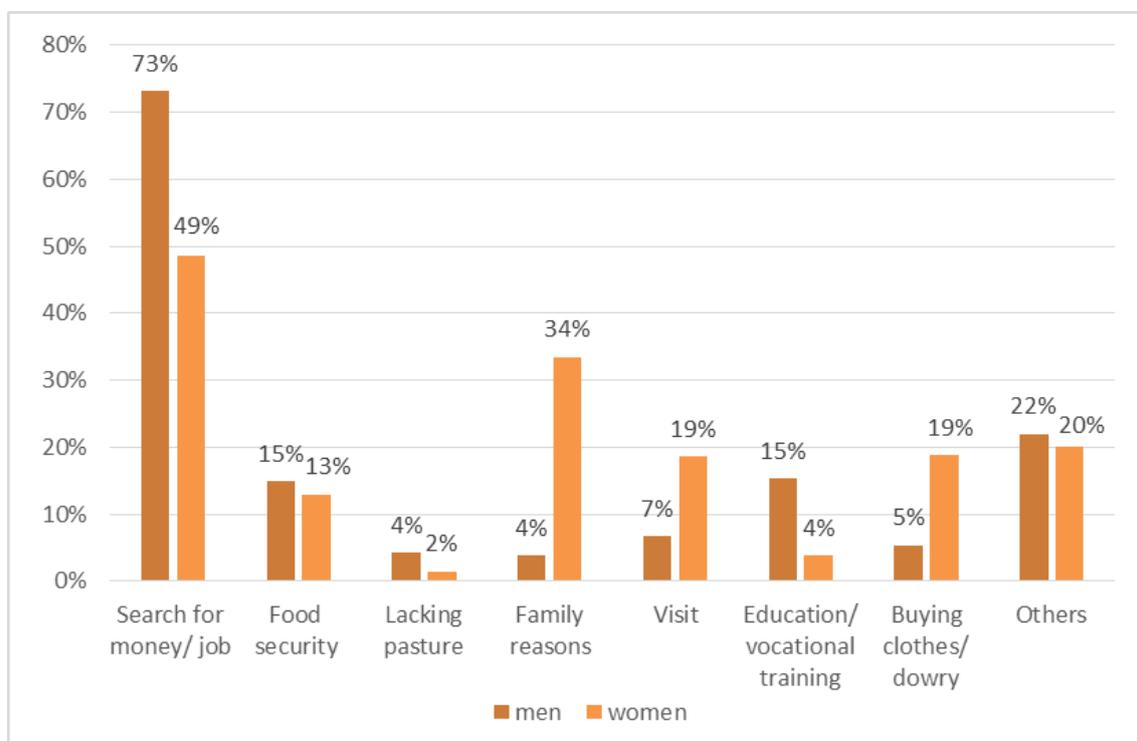
The motives differ only by age in Senegal but not in Mali. In Senegal, the migration motives “search for money/job” and “food security” are less important for the youngest

⁵⁵ More information on the impact of schooling on people’s migration motives from the micre-survey can be found in van der Land and Hummel (2013).

age group - the 18- to 30-year olds - compared to the two elder age groups, while “education and/or vocational training” and “visits” have gained importance as migration motives. The migration motives of people with and without agriculture as their main economic activity only differ very slightly from each other. Farmers migrate slightly more often for economic reasons (71% versus 59%), but less often for family reasons (8% versus 20%).

As suggested by the literature, the analysis of people’s migration motives by gender might provide more information on whose migration is primarily determined by environmental stress. The *main* motives of both men and women indicate “the search for money and job opportunities” as the main motive for their first and last migration. Only the frequency is higher among men’s migrations compared to the women’s migrations (73% versus 49%) (see Figure 26). Women respond more often than men to “family reasons” - mostly marriage -, “buying clothes/dowry” and “visits” as main migration motives, while “education and/or vocational training” is a more important migration motive for men. The motive “food security” is only slightly more relevant for the migration of men than for women.

Figure 26: Main migration motives of men and women for the first and last migration.



Source: Author; men n=865; women n=460; multiple answer possible; migration dataset.

Although the migration motives differ between men and women, the differences are much stronger between the study areas than between genders. “Food security” as main motive is almost equally important for the migration of men and women from Senegal (24% and

21%), while it is low for both, men and women (8% and 2%), from Mali. For the Malian women, dowry (18% versus 1%) and clothes (16% versus 8%) are more important main migration motives than for the Senegalese women.

With respect to gender and age, the survey shows that young women from Mali (the 18- to 30- year olds) more often state economic reasons as their main motive for their migration than the older age groups, the 31- to 50-year olds (45%), and those who are older than 50 years (5%). This applies also for the migration motives “dowry” and “buying clothes” while “family reasons” have become less important. The results show no significant differences for the Senegalese women and Malian men. For the youngest Senegalese men, the motives “the search for money/job” and “food security” decreased in favour for “education and/or vocational training” as compared to the elder age groups.

The analysis of the *further* migration motives by gender (men n=301; women n=142; multiple answers possible, migration dataset) illustrates that “food security” is the most important further motive for men’s migrations (48%), while for women’s migrations “buying clothes” (31%), “dowry” (30%) and “food security” (22%) are almost equally-relevant further migration motives. As for the main migration motives, the further motives differ between men and women from the two study areas but differ more strongly between the study areas. In general, “food security” as a further migration motive is a much more relevant further migration motive in Senegal than in Mali. Senegalese men relate their migrations much more often to “food security” as a further migration motive than their female counterparts (67% versus 27%), whereas in Mali this applies to only 20% of the men’s migrations and 11% of the women’s migrations. “Lacking pasture” is only a relevant further motive for the migrations of Senegalese men (18%) which might result from the higher number of (semi-sedentary) pastoralists in the Senegalese study area compared to Mali.

Important further migration motives of the Malians are “buying clothes” for both women (48%) and men (40%) and “dowry”, which is more important for women’s migration (44% versus 22%). Senegalese women relate their migration by 20% to each of the migration motives “visits”, “dowry” and “buying clothes”, which play almost no role for their male counterparts. Surprisingly, respondents from the Senegalese study area not only agree more often to the motive “food security” but also to the motive “adventure/curiosity” with 12% of men’s and 9% of women’s migration, while only a small percentage of the Malian migrations relate to this motive.

In the qualitative interviews both men and women from Senegal and Mali also mostly state economic reasons as main driver of their migration, either by referring the “search for money/ job opportunities” (in French: “chercher de l’argent/ du travail” or “aller chercher”) or to the “lack of means” (in French: “manque de moyens”). However, the interviews suggest - and here the findings go beyond the quantitative survey results - that the purposes of the economically-motivated migrations are different for men and women. Men usually relate their economic migration to their responsibility to support the family and to ensure the family’s economic well-being and food security. They often state they migrate in order to be able to build and maintain houses, or to buy agriculture equipment, livestock or consumer goods, such as motorcycles, clothes or mobile phones. On the contrary, women, particularly from Mali, specify that their migration - usually to work as domestics or petty traders in the cities - aims at preparing their marriage, to be able to fulfil their own needs, and to afford kitchen equipment, as well as fashionable clothing and jewellery.

C’est l’homme qui s’occupe de la nourriture, tout ce que la femme gagne c’est pour elle. Elles reviennent avec des habits, des bijoux mais tout cela c’est pour elles. (Alioune / 44 / m / Sn / I 41 / L 80-81)

On [les filles, author] ne va pas chercher de l’argent pour acheter le mil. C’est de l’argent pour payer les ustensiles et les habits. (Korka / 29 / f / Ml / I 13 / L 64-65)

The findings show that not only the migration motives but also the purposes of migration differ among the people.

In sum, people’s migration motives are manifold and differ between the study areas as well as by social characteristics, such as age, gender and the level of education. People often have several motives and different purposes for their migration - particularly in relation to economic migration - which might not be mentioned if studies only ask for the (main) reason of migration without any further inquiry. The motives are not only related to the household’s economic needs, but are also linked to personal needs and aspirations (e.g. buying clothes, visits, education, and adventure).

In both study areas, economic reasons are the most relevant migration motives for men and surprisingly also for women. In contrast to the literature on female migration in general and of earlier studies on migration from rural Mali, women primarily indicate economic reasons, ahead of family reasons and dowry - which in addition is more relevant

for younger women than for the elder ones. This suggests that either the migration motives itself or their perception have changed for the Dogon women⁵⁶, which might be the reason that Dogon women are more likely to attribute economic reasons to their migration now as compared to in earlier days. Recent studies on female migration from West Africa report an increasing number of independent female labour migrants and suggest that the negative perception of female migration is slowly changing (Hertrich, Lesclingand 2013; Sow et al. 2014) and that migration often results in a reshaping of gender norms and roles (Hunter, David 2011: 314). Thus, the findings might indicate a change of perception of gender roles and a higher acceptance of independent labour migration of women.

However, the high agreement of women to economic migration motives could also suggest a lack of financial means or an increasing need of cash caused by environmental or other external stressor or even a change in lifestyle. Although the money from female labour migration has been attributed by both men and women to the women's own needs only, it might still support the households' livelihood in some way. In this case, it might undermine the men's role as main breadwinner and income generator, if the women's income is considered as support for the household's livelihood - as this had been suggested by Findley (1994) for the fact that economic reasons were not attributed for women's migration from rural Mali during the 1980s. However, the (increasing) importance of economic migration of young Malian women also could have been simply inspired by the wish to escape traditional authority and change unequal power relations because the independent migration contributes to more (financial) autonomy and to a greater empowerment of the women.

Environmental reasons for migration are much more relevant for the Senegalese than the Malians and more relevant for men than for women. Surprisingly, "food security" as main motive for migration is not significantly more important for farmers than non-farmers. However, economic and environmental reasons are less important for the youngest Senegalese compared to the elder age groups, which might suggest either that economic and environmental reasons for migration might have been less important recently and might be less important in the future, or that younger age groups migrate generally for other reasons.

⁵⁶ Little is known on the role of female migration from the Senegal study area in the past.

6.4 Chapter conclusion: Migration as a common phenomenon in areas with difficult livelihood conditions

This chapter has illustrated the livelihood conditions and the main features of migration in both study areas. People mainly live on small-holder agriculture and thus are highly dependent upon on the natural environment - with the seasonality and the high variability of rainfall as main stressors to their yields and livelihoods. Migration is one of people's activities to cope with the environmental stressors.

Migration is very common in both study areas and almost equally common among men and women, among people with different levels of education and among farmers and people with another economic activity. Most of the movements are circular migrations that primarily take place within the country. The motives and the purposes of migration differ between the study areas and along social characteristics, such as age, gender and the level of education. This suggests that migration is not a livelihood or an adaptation strategy for all people but that people have different reasons for their migration. Economic reasons are the main reasons for people's migration from both study areas - for men and surprisingly also for women. Environmental factors as main drivers of migration seem only to be important for the Senegalese - particularly for the men. The focus in environment-migration research on migration as adaptation strategy to environmental stress in response to household's economic needs, however, leaves little room for other non-economic and more individual migration motives. These motives might contrast the household's expectations on the goals of the migration of its members.

Not only do the motives for migration differ along social characteristics, but so do the reasons to stay and the individual's degree of voluntariness. In general, men's reasons to stay implied a higher degree of voluntariness. The analysis of the reasons to stay as well as the analysis of the migration decision illustrate that not all people have the capability to choose freely between migrating and staying; rather, some people might be expected to migrate (e.g. men) while others are restrained from migration (e.g. women - particularly in Mali). In contrast to the literature, the findings suggest that the capability to migrate is not primarily restrained by a lack of financial means or a lack of education but by social norms that are shaped by unequal power relations among men and women and among elder and younger people within a household and a community. Therefore, it is important to distinguish if people want or need to stay in order to assess whether people are "trapped" in an area affected by environmental stress. The same applies for the analysis of migration.

The migration in areas affected by environmental changes has been shown to be influenced by the structural conditions as well as by individual characteristics. Particularly, environmental, social and economic factors are in most cases highly intertwined and difficult to separate. Therefore, migrations that are primarily economically motivated could be a consequence of environmental stressors that trigger people's poverty or lack of financial resources. But to consider all economically-motivated migrations as livelihood or adaptation strategies to environmental stress ignores that people's migration motives are manifold, and include motives that are linked to personal needs and aspirations (e.g. buying clothes, visits, education, and adventure) rather than to household needs.

The next chapter elaborates the drivers of people's migration in more detail and places special emphasis on the impact of environmental stress on people's migration patterns and motives by drawing on the qualitative interviews. Although this thesis starts from the premise that economic, social and environmental factors of migration are interdependent they will be analysed at first separately in order to provide a clearer presentation.

7 Drivers of migration: Social-ecological conditions and individual aspirations

7.1 The role of environmental factors in migration

7.1.1 *Whose migration is driven by environmental factors?*

The recent literature on the environment-migration nexus regards migration from rural areas affected by slow-onset environmental changes as an adaptation or livelihood strategy for coping with and adapting to these changes, which can prevent them from being forced to move later on (Adger et al. 2003; McLeman, Smit 2006; Tacoli 2009a, 2011a, 2011c; Ober 2014; IPCC 2014). Environmental and economic factors that influence the migration decision are assumed to be highly interdependent. Environmental changes influence economic drivers through effects on agricultural productivity and rural livelihoods, and may also influence people's ability to move (Black et al. 2011a).

The previous chapter has illustrated that economic reasons are the main migration motives for both men and women from both study areas, but are more relevant as a migration motive for men. Environmental aspects - such as "food security" and "lacking pasture" - are much more relevant for the migration of the Senegalese. While the motive "food security" is clearly related to environmental stressors, economic migration may or may not be so. The fact that economic reasons are the main migration motives could be interpreted in different ways. It could indicate that migration is a livelihood strategy to compensate either for losses in agriculture as a result of environmental changes or for a lack of development and employment in the sending areas. However, it could also be a result of economic opportunities elsewhere and be an expression of individual motives and aspirations.

More than two-thirds (64%) of all migrations - including people's first and last migrations - are motivated mainly by economic reasons and 27% by environmental reasons (i.e. food security) as main and further migration motive (see Table 10). Environmental motives are more important for migrations in Senegal, where environmental factors have influenced almost half of the migrations (45%), while this applies to only 10% of the migrations in Mali. However, economic and environmental reasons for migration are closely related - at least for migrations in Senegal, where 71% of the economically motivated migrations have also been motivated by environmental reasons as another main or further

motive. In contrast in Mali, only 13% of the economically motivated migrations have also been motivated by environmental reasons.

Table 10: People's economic and environmental migration motives by country.

Migration motives		Country		Total (n=1336)
		Senegal (n=649)	Mali (n=687)	
Economic reasons as main motive	n	372	484	856
	%	58	71	65
- thereof: economic reasons with no environmental impact ⁵⁷	n	106	421	527
	%	29	87	62
- thereof: economic reasons with environmental impact	n	266	63	329
	%	71	13	38
Environmental reasons (i.e. food security) as main and further motive	n	292	70	362
	%	45	10	27

Source: Author; migration dataset.

Half of the participants who indicate economic reasons as main motive for their migration, state also a further motive for their migration. This applies to two-third of the Senegalese migrations, but only to one third of the Malians. Economic motives, however, are often related to migration motives other than environmental reasons - particularly in Mali. These other further motives related to economic motives – as for the general further motives described in chapter 6.3.2 - differ considerably between the two study areas: in Senegal, participants indicate “visits” (15%), “lacking food security” (14%), “adventure/curiosity” (14%), “buying clothes” (12%) as further motives of their economic migration, while in Mali, participants indicate “buying clothes” (45%), “dowry” (28%), “tax” (24%) and “tradition” (11%) instead. This suggests that economically motivated migration is - particularly in Mali - mostly related to a whole range of motives other than food security. The higher response to the motive “food security” among the Senegalese contrasts the findings on peoples livelihood conditions and food security described in chapter 6.1, in which a higher percentage of Malians reported a lack of food security for the years 2010 and 2011. Surprisingly, the findings show no significant relation between those people

⁵⁷ Includes all migrations that have been motivated mainly by “the search for money/job” minus all migrations for which “food security” has been indicated as main or further migration motive.

who rely on rain-fed crop production and/or livestock breeding and indicated food insecurity for 2010 and 2011, and the migration motive “food security” for movements during these years. Also surprising is the finding that the main economic activity - whether agriculture or another activity - has no significant effect on either the motive “search for money/job” or on the motive “food security” as main or further migration motive.

The findings suggest however, that the motive “food security” was slightly more important for migrations that took place during the 1970s, 1980s and 1990s than for migrations during the last decade from 2000 to 2012. Moreover, respondents in the youngest age group, the 18- to 30- year old (age at survey conduction), indicate “food security” as a main and further migration motive much less frequently than respondents in both of the older age groups (31- to 50- year old, and 51 years and older), with no effect by the level of education. This applies particularly to the men from Senegal, of whom only 7% of the youngest age group indicate food security as their main migration motive, compared to 30% in each of the two older age groups. Instead, the youngest survey participants generally agreed more often to “visits”, “dowry” and “education/vocational training” as main motives and “buying clothes”, “adventure/curiosity” and “dowry” as further migration motives than the older participants.

Considering the participant’s age at migration, the findings show that the 31- to 50-year old agree the most to “food security” as main and/or further migration motive with 38% (compared to those younger than 18 years (21%), the 18- to 30-year old (27%) and 51 years and older (36%)).

Young people have always ranked other migration motives above “food security” possibly because the responsibility for the household may be lower before the foundation of a family of one’s own. However, the survey data suggests that “food security” as a migration motive has only been less relevant for the youngest migrants for recent migrations, i.e. for 19% of young people for migrations from 2000 to 2012. The share of young people who state “food security” for migration during previous decades was higher (1970s: 33%, 1980s: 45%, 1990s: 35%) ($X^2=30.682$, $p<0.001$, Cramer-V=0.223). This illustrates that the influence of environmental factors on the migrations of young people has been lower during the last decade - possibly due to better rainfall conditions and/or other factors, such as an increasing level of education.

The level of education has a considerable effect on “food security” as a migration motive. In Senegal, “food security” as a main migration motive plays a bigger role for participants with no formal education (25%) or just a primary education level (29%) than for those

with a high level of education (6%). The differences are even greater when considering the agreement to “food security” as main *and* further migration motives (50%, 49%, 16%). In Mali, people with all levels of education barely attribute their migrations to “food security”. In both countries, people with a high level of education most often indicate “education and/or vocational training” as one of their main objectives for migration (55%), while only 9% of the participants with a primary education and 6% with no formal education indicate this migration motive. The distribution of migration motives by the level of education is quite similar for people’s first and last migration. With regard to gender, few women confirm “education and/or vocational training” as a motive for the first migration compared to men (4% versus 15%).

The qualitative interviews illustrate in addition, that migration behaviour among young people changes with improved opportunities for schooling: people explain that young men and women who go to school are less likely to be involved in labour migration.

Si tu n'es pas instruit à l'école, si tu ne vas pas à l'école, si tu ne fais rien, il faut aller chercher de l'argent, comme je l'ai fait. (Binta / 23 / f / Ml / I 23 / L 42-43)

Although young people sometimes refuse to go to school, or drop out of school to migrate in search for money or employment opportunities, the interviews suggest that today adolescents attend school more often and for a longer period compared to the past. Therefore they are less likely to migrate in search of job opportunities at a very young age.

In sum, the findings suggests that environmental factors - measured by the motive “food security” - differ considerably between the two study areas. Environmental factors influence the migrations in Senegal to a much higher extend than in Mali. However, in Senegal environmental factors are more relevant for men’s than for women’s migrations - as this had been expected. But why do environmental factors play a much bigger role for migrations in Senegal than in Mali despite the quite similar environmental conditions in both study areas?

A possible explanation for the higher relevance of the motive “food security” (as main and further motive) for the Senegalese migrations compared to migrations from the Malian study areas relates to the annual average rainfall. In the Senegalese study area, annual average rainfall is 400mm lower than in the Malian study area, where the annual average rainfall is 500mm. This difference of 100mm of annual average rainfall seems to make a huge difference with respect to people’s food security situation and accordingly influences their migration motives. The finding of the survey that the Senegalese respond more

often to the response item “lack of rain” for the motive food security for both the main and the further migration motive, supports this argument.

The impact of environmental factors on people’s migration, however, depends also on social characteristics, like gender, age and level of education. Migration of young people - particularly during the last decade - is more often related to individual motives and economic motives that are not related to food security than for elder people and than in previous decades. Important motives are “economic reasons”, “education and/or vocational training”, “visits”, “buying clothes” and “adventure/curiosity”. The findings suggests that migration motives have changed and that migration, particularly of the youngest and the most educated, has a voluntary character and is rather linked to individual motives than to household needs. All in all environmental factors are most likely to affect the migration of middle aged men, without formal education or a low level of education.

The case studies on environment, livelihoods and migration in the West African Sahel differ on who is more sensitive or vulnerable to environmental changes. This thesis has illustrated on the one hand that men’s migration is more likely to be driven by environmental changes due to their traditional role as breadwinners. Similarly Henry et al. find for people’s first out-migration in Burkina Faso that “male migration should be more sensitive to rainfall conditions, even though female migration may also be expected to rise in some circumstances” (Henry et al. 2004: 430). On the other hand, it has shown in the previous chapter that women are less likely to decide freely between migrating and staying and thus might be vulnerable to environmental stress if they have no opportunity to migrate in order to adapt to external stressors. Similarly, the Foresight report notes that “women are more likely to be more vulnerable to environmental risk, as they are excluded from adaptive migration” (Foresight 2011: 74). The next section focusses on the impact of environmental factors on people’s migration patterns.

7.1.2 The impact of environmental factors on migration patterns

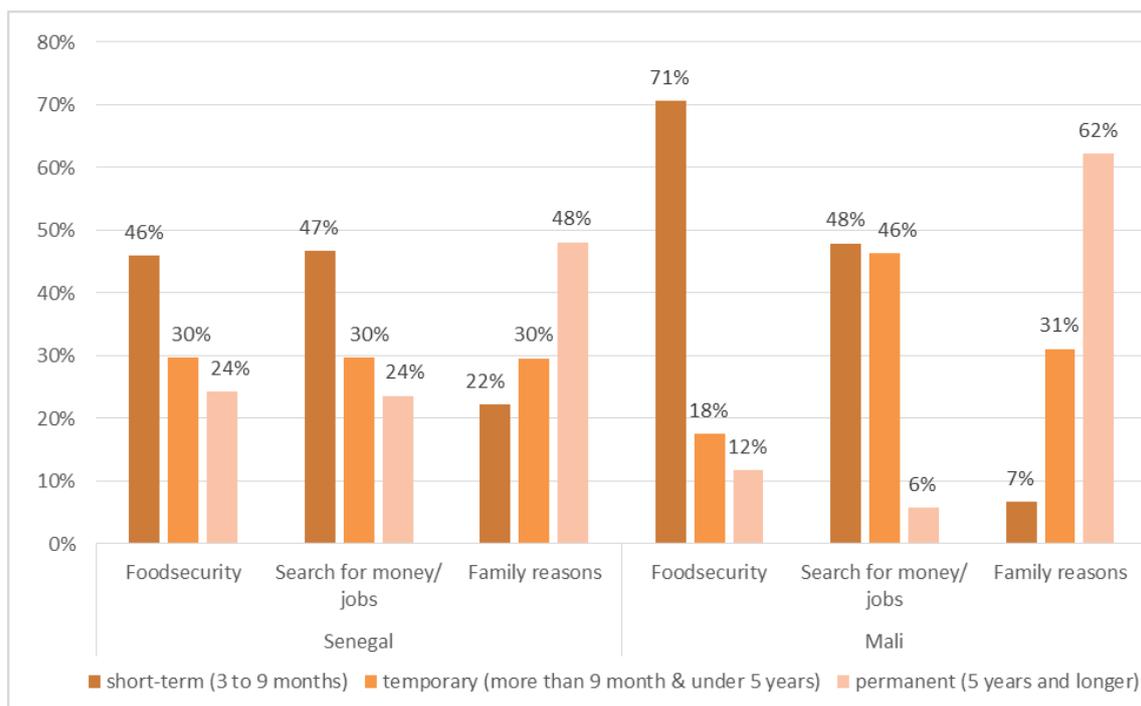
In the literature, environmentally-induced migration is mainly agreed to be a short-term and short-distance migration because an international destination is assumed to be too costly and time intensive to function as a seasonal or short-term activity (Findley 1994; McLeman, Hunter 2010; Schmidt-Verkerk 2011; Bremner, Hunter 2014). Nevertheless, Henry et al. found in their case study on rainfall and people’s first out-migration in Burkina Faso that short-term migrations are significantly less likely to follow severe rainfall deficits (Henry et al. 2004). With respect to the migration motives, economic reasons

are found to be more often related to long-term migration (of men) and to long-distance migration in the region (Findley 1994; Henry et al. 2004). In contrast, family reasons were found to be more often related to short-distance moves (Henry et al. 2004) and to short-cycle migration - except for marriage which often results in permanent migration (Findley 1994).

According to the environment-migration literature, migration as a response to environmental stress is expected to be short-term and short-distance, while economic reasons are expected to relate rather to long-term and long-distance moves. However, the fact that environmental and economic reasons for migration are often highly intertwined could weaken these assumptions.

The survey findings illustrate that the duration of migration strongly depends on the migration motive (see Figure 27). Participants who indicate “food security” as main migration motive of their first migration were much more likely to migrate short-term (for less than 9 months) than temporarily or permanently. People who migrated for economic reasons often stayed for a short-term or a temporary period, while those who migrated for family reasons - including marriage - were the most likely to migrate permanently. In Senegal, the duration of people’s first migration was similar for those who migrated for economic and food security reasons.

Figure 27: Selected main migration motives by the duration of people’s first migration and by country.



Source: Author; Senegal n=377; Mali n=396; multiple answers possible for migration motives.

The general analysis of the migration patterns in chapter 6.2.1 has shown that the Senegalese primarily migrate short-term, while the Malians primarily migrate for a longer period. This makes sense when considering that the Senegalese more often migrate for “food security” which is primarily related to short-term migration. If only economic migrations that are not related to food security as a further motive are considered, the share of short-term migration decreases slightly in favour of temporary and permanent migrations in Senegal.

The qualitative interviews suggest that people respond to poor rainfall and crop yields by extending their duration of migration - either by leaving the home area earlier or by staying longer in migration - or by increasing the number of migrants within the household - as this has been shown by the survey findings in chapter 6.1. In this case, migration is not just a supplemental activity to agriculture, but is rather needed to compensate for the poor harvests.

Il y en a plus cette année [2011-2012, author] qui sont partis. (...) C'est à cause de la mauvaise récolte. (Group / male village elders / M1 / I 18 / L 60-62)

Comparing the number of people captured in the survey who migrated in 2010, a year with good rainfall, and in 2011, a year with poor rainfall, the number of migrations is higher for the year 2011 than for 2010. In Senegal migrations almost doubled, from 27 in 2010 to 47 in 2011, and were also higher in Mali in 2011 (69) than in 2010 (54) - a year in which the number had been high already. The percentage of people who indicated “food security” as a migration motive for their migrations in 2010 and 2011 was similar for both years in Mali, while in Senegal it increased from 37% in 2010 to 45% in 2011. This could be an indication that poor rainfall indeed increases migration, however, the increase in migrations cannot clearly be linked to environmental factors but might have been influenced by other determinants.

The qualitative interviews moreover illustrate that the duration of migration not only depends on the motives to migrate but on many different factors, such as the type of labour engaged during migration, the financial gains, and the number of people of working age in the household. Once people have found a relatively well-paid job while in migration, they often prefer or have to stay in migration due to a fixed contract time rather than return for the harvest - as the following citation suggests.

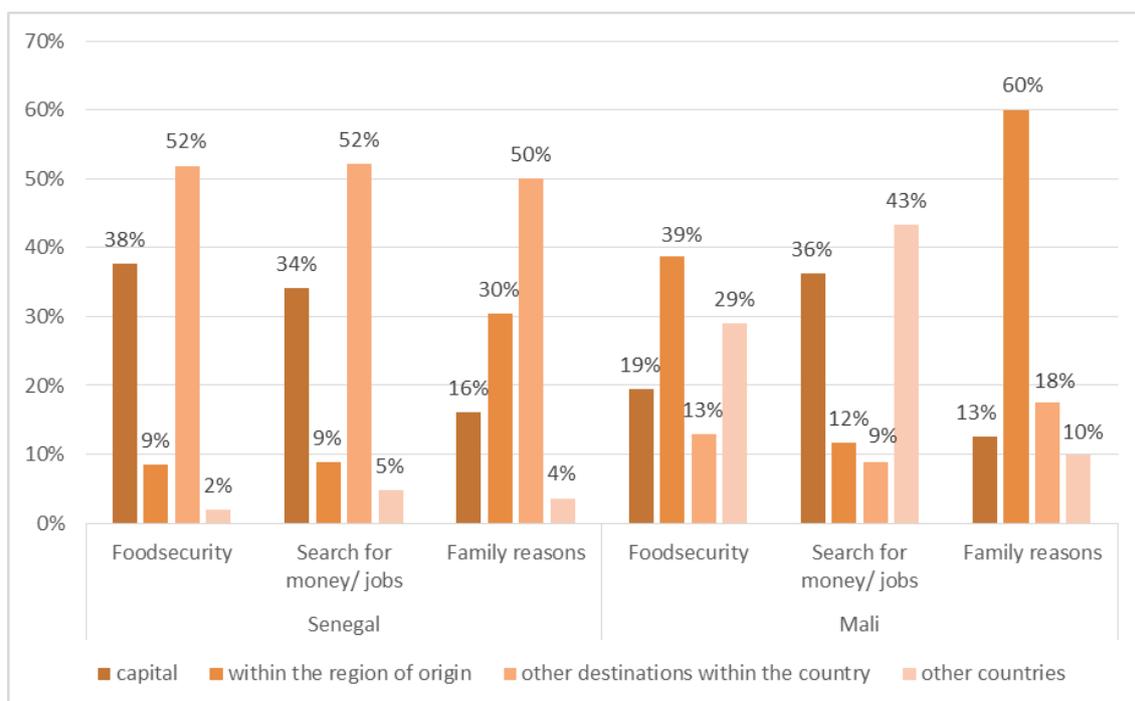
Là-bas, si tu trouves un bon travail, tu gagnes encore, tu préfères acheter et envoyer, parce que là où tu travailles, si tu laisses pour partir et venir au village,

quelqu'un d'autre prendra ta place et tu n'auras plus ce travail à ton retour. Alors ces gens-là préfèrent rester et envoyer ce qu'ils ont gagné. (Group / young men / M1 / I 04 / L 397-406)

The findings suggest that at least in Senegal, migration is often a short-term activity which aims at complementing agriculture. However, more than half of the people who indicate “food security” or the “search for money and job opportunities” as a main migration motive stayed longer than nine months when they first migrated.

With respect to the destinations of migration, the survey results show no considerable differences between the migration destinations by motives. In Senegal, each of the three main migration motives “food security”, “search for money/job” and “family reasons” mainly applies to long-distance destinations within the country, followed by the capital as destination for the first two migration motives (see Figure 28). Migration within the region of origin is the most relevant for “family reasons” in Mali (60%) and to a lower extent in Senegal (30%), but is also important for the motive “food security” in Mali (36%). International destinations within the African sub-region are only important for migrations from Mali and are mainly attributed to economic reasons (43%), but surprisingly also for the motive “food security” (29%).

Figure 28: Selected main migration motives by the destination for people's first and last migration and by country.



Source; Author; Senegal n=411; Mali n=447; only rural study areas; multiple answers possible for migration motives; migration dataset.

In sum, the survey findings indicate - in line with most studies - that migration related to food security is mainly short-term. Short-term migration is often seasonal migration and thus a supplemental activity to agriculture. However, in contrast to earlier studies, the findings do not show that environmentally motivated migrations are mainly short-distance. In Mali, migrations linked to food security are more often short-distance than economically motivated migrations, but one third of environmentally influenced migration is directed towards an international, sub-regional destination. In Senegal, migration - irrespective of the motive - has been mainly directed to areas, other than the capital, within the country. For the Malian study area the survey findings show that long-distance moves are linked to economic reasons while short-distance moves rather relate to family reasons. This is in line with earlier studies on migration from Mali and Burkina Faso (Findley 1994; Henry et al. 2004).

Surprisingly, farmers from Mali were even more likely to migrate to an international (sub-regional) destination than non-farmers. This seems to support the suggestion that emigration within the African sub-region is an extension of internal migration with both resulting mainly from development and wage disparities within and between countries (Adepoju 1998 in King, Skeldon 2010: 1621). The findings suggest that environmental stress does not keep people from migrating to long-distance destinations - even in the case of short-term migration - but that the choice of destination rather depends on other aspects, such as social networks, which lower the risk of migration, and the (expected) financial revenues. International migration to Europe or to other destinations outside the African continent is, however, rare from both study areas.

People respond to poor rainfalls or (expected) poor yields by leaving home earlier, staying longer in migration, by increasing the number of migrants within the household, or by increasing the financial support of household members who are already in migration. Similar results have also been reported in previous studies. Davies notes for migration in Mali that “migrants increase in number in bad years, and the timings of their arrivals and departures change, but the pattern of migration does not fundamentally alter” (Davies 1996: 10). That people in the Sahel tend to build on previous migratory patterns in the case of external stressors, including environmental stress, has also been illustrated by other studies (e.g. McDowell, de Haan 2000; de Haan et al. 2002; Guèye et al. 2007). Rademacher-Schulz et al. found an accelerated migrant departure in 2011 for Northern Ghana during the rainy season and assume that this is due to a seasonal shift of migration from the dry to the rainy season - as an “ex ante risk-management” approach (Rademacher-Schulz et al. 2014: 51). However, the findings suggest that the duration not only

depends on the conditions in the home area but on the working conditions, the expected profits and the profitability of the work in migration compared to the revenues from agriculture.

7.1.3 Migration as a necessity and/or an opportunity

The evolution within environment-migration research from viewing migration as a failure to adapt to viewing migration as an adaptation strategy has shifted the focus from “forced” migrants to “trapped populations” as the most vulnerable.

It is widely acknowledged in the environment-migration research that the ability to migrate depends on people’s assets and the structural conditions in the region. However, it is consensus that people living in an area affected by environmental changes are usually not equally “at risk” because environmental stressors often aggravate already existing vulnerabilities (Blaikie 1994; Kliot 2004; IOM 2009). Large households are for example considered as better off because they can more easily adapt to the absence of migrants (de Haan 2000). The local socio-economic context is considered crucial to determine people’s migration decisions in areas affected by environmental change (Tacoli 2011c). Local diversification strategies often are or become insufficient to cope with environmental stress and leave migration as the only satisfying strategy to ensure the family’s food security due to a lack of alternative local employment opportunities in the areas. In these cases, migration often is a last resort and it would be euphemistic to describe these migrations as an adaptation strategy to environmental changes because adaptation implies always a certain form of agency (Bakewell 2010).

The survey results indicate that most people, both men and women, from both study areas assess migration as very positive, and highlight the advantages of migration. The vast majority of the respondents (86%) would advise other family members to migrate, although 25% thereof would limit this advice to migration within the country or the continent. The positive aspects highlighted included gaining money to support the family or to invest in housing and agriculture or other businesses, and to be able to save money or to afford “luxury goods”, such as clothing, jewellery, a motorcycle, a mobile phone, etc., but also included personal gains, such as learning new languages, getting to know new people, improving skills, or even discovering new things and behaviour. The positive aspects of migration thus relate to the advantages and opportunities for the household as well as for the migrant herself/himself.

The positive assessment of migration by most people suggests that they perceive it as an opportunity rather than a necessity. This is not to say that some people might not have the capability to stay and might be forced to migrate, but only very few interviewees indicated that they had no other option than to migrate in order to ensure their own and their family's food security. They usually referred to their migrations during the time of the severe droughts of the 1970s and 1980s - as the following citation of a Senegalese man:

Je n'avais pas les moyens de rester là-bas [au village, author]. (...) J'ai pris la décision de quitter le premier car je n'avais plus rien, je n'avais plus AUCUN moyen qui me permettait vraiment de [rester?, incomp., author] (...). Quand je suis venu à Dakar, on m'a prêté de l'argent pour le transport. (Ndaga / 55 / m / Sn - Dakar / I 37 / L 8, 21-24).

Similarly the "Loss and Damage" study on Burkina Faso reports that although the research focussed on recent droughts, people mainly recalled the extreme droughts in the 1970s and 1980s (Warner et al. 2013).

The interviews suggest that nowadays the environment most likely has an effect on people's need to migrate when it comes together with unfavourable economic or social conditions. The case of Moussa, a 30-year old Senegalese man from the rural area with no formal education, illustrates that an unfavourable household composition generated his need to migrate.

Moussa is the only son in the household and after the death of his father, he had taken over - due to tradition - the role of his father and the household head and had become responsible for the food security of his mother and his sister. For several years he cultivated rain-fed crops during the rainy season and migrated to work in Dakar for about five months during the dry season. Insufficient yields due to lack of rain and lack of farming equipment, combined with the uncertainty and unreliability of a satisfying outcome, led to Moussa's decision to find temporary or permanent alternative and more secure employment elsewhere. Although he would have preferred to stay in the village and to gain his living as a farmer, the labour migration to Dakar seemed to be his only option to secure the family's livelihood. Today Moussa works as a mechanic's assistant in Dakar and only returns to the village to visit his family. While his mother and sister continue farming by themselves, Moussa supports them with cash he earns in Dakar. He thereby not only ensures the household's food security, but also allows his mother and sister to remain unconcerned in the village.

Parce que ces temps-ci l'agriculture ne marche pas comme elle devrait l'être. Il y a beaucoup de contraintes notamment liées à la disponibilité du matériel agricole, et à la pluie. (...) C'est tout à fait logique de ne pas s'entêter à exercer une activité qui ne rapporte rien. Mais faudrait-il trouver une activité alternative, quelque chose d'autre à faire. Si tous nos espoirs reposent sur l'agriculture, on est obligé de cultiver pendant l'hivernage et espérer chaque fois que ça aille mieux. (...) Si tout se passe bien comme nous le souhaitons, nous préférons de loin rester chez nous, au village. Mais toutefois on peut sortir pour aller travailler et revenir au village. (...) L'hivernage n'est plus ce qu'il était, la pluie a diminué, on a beau cultivé sans rendement. Il faut qu'on se démène pour avoir de quoi entretenir la famille et la seule alternative c'est de partir, de sortir du village. (Moussa / 30 / m / Sn / I 32 / L 68f, 98-101, 103f, 128-130)

The citation suggests that the environmental conditions and the revenues from agriculture have worsened. However, what caused Moussa to abandon agriculture and to migrate to work temporary or permanently in the city was the combination of unfavourable environmental conditions and him being the only male family member in working age. Moussa's case illustrates very well that it is not environmental factors alone but the social-ecological context which determines people's migration decisions and patterns.

The survey findings on people's reasons to stay in the village and the qualitative interviews suggest that people might need or might be forced to migrate rather than not having the ability to do so. Financial means, however, matter in terms of destinations, e.g., people usually lack the financial and social capital to leave the African continent.

The need or wish to migrate may also change with a person's change in marital status and respective responsibility for a household. The citation of Elhadj, an elderly migrant and father who migrates for short time to Dakar every year illustrates that the migration motives change after marriage or with the foundation of a family. Elhadj explains that he spent the money he had gained while migrating as a young unmarried man only on his own needs and desires. But since the foundation of his family he migrates to fulfil the needs of his own household and those of his parents. Thus, migration became a necessity to ensure the family's food security and well-being after his marriage.

J'ai commencé à ressentir que c'était une nécessité lorsque j'ai fondé une famille car tout ce que je gagnais je le partageais en deux parties: à mes parents et le reste à la [famille? incomp., author]. Tout ce qui me revenait c'était pour mes activités

quotidiennes, contrairement à depuis que j'ai une femme, c'est une nécessité d'aller travailler et subvenir aux besoins. (Elhadj / est. 60 / m / Sn / I 38 / L 109-111)

In contrast, a young male interviewee from Mali explains that he has not migrated since his marriage, though he previously migrated to earn money and for adventure. Married women are usually expected to take care of the household and the children and generally no longer migrate. If they do wish to migrate, they need the accordance of their husbands to do so.

The findings suggest that migration as a last resort, or the pure necessity to migrate, is an exception rather than the norm - in most cases migration from both study areas was portrayed as both a necessity and an opportunity. The intertwining of economic and environmental drivers of migration suggests what the UNDP Human Development Report on human mobility and development has noted “moving is commonly described by the poor as both a *necessity* - part of a coping strategy for families experiencing extreme hardship - and an *opportunity* - a means of expanding a household’s livelihoods and ability to accumulate assets” (UNDP 2009: 16). Although the financial support of the migrant members is certainly crucial for most households in the study areas, the reason for migration is more often related to opportunities rather than to a need to leave.

In contrast to the UNDP findings, the interviews illustrate that opportunities are not only related to the household but very often to the individual. The influence of individual aspirations on the decision to migrate results in it often being motivated by necessity and opportunity at the same time.

Deux choses [ont motivé mon départ, author], à l'aventure, à la découverte mais aussi pour chercher du travail. (...) L'élevage ne suffisait pour satisfaire mes besoins et je voulais aussi découvrir la ville de Saint-Louis. (Sadiou / 40 / m / Sn / I 07 / L 13, 19-20)

Depending on the social-ecological conditions and people’s capabilities, migration can either constitute more a necessity or more an opportunity. Therefore, it is necessary to distinguish if people “want” or “need” to move or to stay. While the first expresses a voluntary character of mobility, the latter rather relates to a forced character. Migration may not only be a response or adaptation strategy to unfavourable social-ecological conditions in the region of origin, but a migration towards opportunities which correspond to individual motives rather than to the household’s needs. Consequently, it is important not to consider all migrations in an area affected by environmental changes as an adaptation

strategy (or as a failure to adapt) but to consider people's capabilities to decide whether to migrate or not.

7.2 The socio-economic factors in the migration decision

7.2.1 Migration as an economic routine activity and to improve livelihoods

Migration in areas affected by environmental changes is agreed to be multi-causal and particularly, the linkages of environmental conditions and social structures - including cultural and economic aspects such as population density, development status, or migration culture - have been highlighted in various case studies as determinants of the migration decision (c.f. de Haan et al. 2002; Doevenspeck 2011; Schmidt-Verkerk 2011; Rademacher-Schulz, Salifu Mahama 2012). For the EACH-For project case studies, it has been reported that "It was typical that respondents would reflect that "x type of environmental change is not a problem" directly related to their household migration decisions but that their decisions had more to do with their livelihoods and economic prospects; yet often these respondents would also add that they had livelihoods closely dependent on environmental conditions (such as farmers, herders, fisherfolk) and that environmental conditions often negatively affected their economic activities and need to use mobility as a coping mechanism" (Warner 2011: 14).

Moreover, migration usually is not only a response to the unfavourable social-environmental conditions in the home area but - as mentioned before - is also encouraged by opportunities elsewhere. Migration in the Sahel has been described as a common supplemental activity to agriculture and/or an economic "routine migration" (Foresight 2011: 71). Despite the shift of the view on migrants as agents, the environment-migration research still focusses on the structural conditions in the migration sending area, and thus on the push-factors of migration with a focus on the environmental factors. Constrained by this "push'- thinking" (Faist, Schade 2013: 5), the research ignores what migration scholars postulate - that people are more likely to migrate toward opportunities than away from problems (Klute, Hahn 2007; Meyerson et al. 2007; Tsegai 2007; Adamo 2008) and what their expectations and goals of their migrations are.

The previous sections have shown that economic and environmental reasons to migrate are closely related - at least in Senegal - and that economic reasons can have different motivations and purposes. The qualitative interviews, particularly interviews with elderly men from Senegal, confirm that seasonal migration has been a well-established pattern in

the region for generations, which is shaped by the seasonality of rainfall. People state that migration takes place independently from the quality of yields but is favoured by the lack of work in agriculture during the dry season and the lack of alternative local employment opportunities in both study areas. Thus, it is considered a routine migration rather than a response to environmental stress and poor yields.

The following citation of Elhadj, an elderly farmer from the Senegalese study area illustrates the yearly alternation of farming and labour migration which is very common in both study areas. Every year after the rainy season, when the harvest is over, Elhadj migrates to Dakar to work at the fish market. The labour activity in Dakar is a regular supplemental activity to farming and takes place independently from the quality of the yields. The quality of yields, however, may determine the duration of his stay in Dakar.

Ça [une bonne récolte, author] peut influencer un peu mes attitudes et les activités que je fais. Ça peut aussi diminuer le temps d'émigration. Mais cela ne justifie pas de laisser mon métier. (Elhadj / est. 60 / m / Sn / I 38 / L 114-116)

The interviews suggest moreover, that migration is not just a seasonal supplemental activity to agriculture but increasingly happens to be a temporary or long-term activity for some household members. This trend is encouraged by the high variability of rainfall, the related uncertainty of yields and the relatively low revenues from agriculture in the study areas.

Today most families in the two study areas are divided in two groups: one part of the family stays in the village, while other family members migrate to find employment in other parts of the country or neighbouring countries. Usually, most of the working age male family members migrate, while the elderly, the younger children, and often the women stay in the village. Depending on the employment, the revenues, and the number of household members of working age, some family members return from migration for the harvest, while others stay in migration to support the family with cash. The migration of an increasing number of household members often results in a decrease in the crop production due to a shortage of labour which is usually compensated by the financial support from the migrants.

Dans chaque famille, si tu regardes les familles, les familles sont divisées en deux groupes: un groupe qui reste au village pour faire l'agriculture qui peut être une mauvaise récolte et une partie aussi qui est dans les villes et qui travaille pour soutenir la famille. Donc si l'agriculture ne marche pas les autres qui sont en ville

sont obligés de supporter la famille en envoyant effectivement de l'argent au village. (Abdou / est. 60 / m / Sn - Dakar / I 35 / L 90-94)

The interviews indicate that the migration of entire families is very rare in both study areas. Elder interviewees explain that this is because people usually are strongly attached to their land due to its value and the family tradition. They indicate that by remaining in the rural areas, at least they possess land, whereas if the whole family migrated permanently, they would need to start from scratch in the destination area. Therefore, at least some family members always stay in the rural area to continue farming, often relying on the financial support of the migrant household members.

The division of the household in two groups, and the related diversification of household income, compensates for the unpredictability of the highly variable rainfall and minimizes the risk of the uncertain yields and food shortages. The financial support of the migrants is crucial for most households in the study areas to ensure the household's food security and to sustain their livelihoods. Moreover, the migration of young household members - particularly men - allows other family members, particularly elders, women and children to stay in the village, as the following citation of an elderly Malian man illustrates:

Nous les [les départs des jeunes, author] avons soutenus, parce que sans l'exode, nous ne pensons que nous serons là présentement. Parce que la Côte d'Ivoire a apporté beaucoup de choses. Les jeunes et tous ceux qui viennent, contribuent pour la famille, donc c'est une grande contribution. (Abdulai / est. 70 / m / MI / I 20 / L 77-79)

However, the support of the migrants not only ensures the household's food security and minimizes the risk of environmental stress, but in many cases also increases the economic well-being of the household. The interviews suggest that not only the seasonality of rainfall and farming but also the economic gains from migration led to the establishment of migration as an economic routine activity. As such, it not only aims at supplementing the revenues from agriculture but also at improving livelihoods and at accumulating wealth and assets. The opportunities offered by migration for an increase in economic well-being considerably influence the migration decision - as the citation of Aly, a young man from Mali, illustrates:

Même si la récolte est bien, il y a des gens qui partent juste pour augmenter. Même s'il y a de la nourriture et qu'ils partent, l'argent qu'ils gagnent augmente. (Aly / 36 / m / MI / I 04 / L 218-220)

The improvement of livelihoods and the accumulation of wealth and assets are, however, not only outcomes of migration but also important migration motives. The fact that people still migrate if there are local employment options suggests that migration is often a means to realize opportunities rather than a necessity. Development projects in several villages in both study areas have created off-seasonal employment opportunities, such as working in vegetables gardens or vast irrigated fields, in order to reduce the need to migrate. These projects might reduce the need to migrate for some people, but people will migrate anyway, as the example of two brothers illustrates. Seydou and his brother, two male interviewees from a Malian village surrounded by huge irrigated fields, work as a cook and waiter in a hotel in Bamako. The brothers explain that they prefer to work in Bamako over staying in the village because the economic gains are much higher than what they could get from the irrigated gardening. This suggests that migration is not just a response to unfavourable living conditions but also a means to improve these conditions.

Cela [si on part ou reste, author] dépend de la quantité d'argent qu'on gagne. (...) Depuis qu'il y a le barrage au village, les gens sont restés. (...) Nous, on est ici à Bamako. (...) On gagne plus ici à Bamako que là-bas au village. (Seydou / est. 45 / m / Ml / I 25 / L 94-95, 234-242)

Migration is thus determined by the seasonality of rainfall and the lack of local employment - unfavourable social-ecological conditions - in the home community but also by the opportunities that migration offers to sustain and improve the household's livelihood.

In sum, the migration of one or several household members is common in almost every household and often takes place independently from the agricultural yields. This suggests that migration is not only an activity to minimize the risk to environmental stress, but that migration is an economic routine activity which aims at increasing the economic well-being of the migrant and her/his family. It is beyond doubt that the migrant's support is crucial for most households in the two study areas. However, it might not be the reason for the migration but rather an important outcome which supports the family, particularly in years of poor yields. Migration might increase in times of crisis, but it is mainly considered a common income-generating activity, often resulting from a combination of fragile environments and a lack of alternative local employment, as has been reported in other case studies on West Africa (c.f. van der Geest 2009; Rademacher-Schulz, Salifu Mahama 2012).

While environmental conditions in the region might have driven people to migrate in the first place, the findings suggest that the gains from migration helped to establish migration as a routine economic activity whose main goal is the accumulation of assets. Despite local employment opportunities, people often prefer to migrate due to expected higher gains from labour activity elsewhere. Considering migration to be primarily an adaptation strategy to environmental changes implies that people migrate in order to adapt to environmental risks and changes, and tends to neglect - what livelihood studies demonstrate - that people's migration might be motivated by the aim to accumulate assets in order to improve livelihoods and economic well-being. Furthermore, the focus on migration as an adaptation strategy to environmental risks, cannot explain why people move to other areas affected by environmental stress, particularly to big urban centres that are threatened by flooding due to sea level rise as has been observed in other studies (Black et al. 2011b).

7.2.2 Migration as a cause and consequence of inequality: The importance of successful previous migrations

Migration may begin for a variety of reasons, but the reasons that initiated migration may be different from those that perpetuate it due to "cumulative causation" (Massey et al. 1993). Causation becomes cumulative by migration altering the social context within which subsequent migration decisions are made (Massey et al. 1993). Migration typically makes migration more likely and in that way it sustains itself. The distribution of income and the culture of migration are two socio-economic factors that are potentially affected by migration and in turn affect the migration decision⁵⁸.

The economic gains from migration contribute positively to household livelihoods, but also increase economic and social inequalities or an unequal distribution of income within and between rural communities (Francis, Hoddinott 1993; Massey et al. 1993; Ellis 1998; de Haan 1999). The household's income usually improves with the migration of one or several household members. Thus, migrant households usually are less poor or wealthier than those who cannot rely on financial support from migrant household members (Tsegai 2007; Tacoli 2011c; Griep 2005). As a consequence of increasing economic inequalities,

⁵⁸ For international migration, social scientists have discussed six socioeconomic factors that are potentially affected by migration and contribute to cumulative causation: the distribution of income, the distribution of land, the organization of agriculture, culture, the regional distribution of human capital, and the social meaning of work (Massey et al. 1993). However, for the migration - internal and international - from the two study areas the distribution of income and the culture of migration are the most relevant.

people's sense of relative deprivation increases their wish to improve their income relative to other households or to their reference groups (Laité 1983; Stark, Taylor 1989; Massey et al. 1993; Czaika, de Haas 2011). Labour migration is often the only effective way for people or households in rural areas to improve their financial situation (USAID 2010).

Moreover, the success of previous migrants often creates a positive image of the migrant that others aim to imitate. This leads to a state which Massey et al. call a "culture of migration" (Massey et al. 1993: 452). A "culture of migration" refers to a development in which migration contributes to a stronger desire for consumer goods and social upward mobility within a community. Eventually migration becomes a socially respected and expected aspect of the community which changes its social norms and values (Massey et al. 1993; Stark 2003). In addition, the migration of household or community members creates social networks which facilitate migration for other household or community members (Massey et al. 1993; Waddington, Sabates-Wheeler 2003; Van Hear 2004; Tacoli 2011c) and contribute to a higher probability that people choose migration from their set of livelihood opportunities (de Haan 2000).

The economic and social changes generated by earlier migrations have been recognised in various case studies on the environment-migration nexus (c.f. Massey et al. 2007; van der Geest 2009; Doevenspeck 2011; Tacoli 2011c; Schmidt-Verkerk 2011; Sow et al. 2014) but surprisingly have often not been included in the analysis of the drivers of migration in areas affected by environmental changes. The influence of relative deprivation on migration decisions in areas affected by environmental change has been shown for example in the EACH-For case study report on Ghana in which the survey participants most often indicated as reasons for their migration that they had "not enough money" (32%) and "my neighbours are better off than me" (27%) (van der Geest 2009: 37).

The qualitative interviews as well as the participant observation reveal that the success of earlier migrations has changed the appearance of the villages and its residents as well as the perception of migration. Particularly elderly people portray impressively how the success of the migrants has changed the community and how the first migrants brought fashionable clothing and other goods to the village which they had never seen before.

Même pour les habits, les gens ne s'habillaient que Dogon. Il n'y avait pas des tenues européennes. C'est quand ils sont allés / ceux qui sont revenus ont ramené des tenues européennes... Il n'y avait pas de vélo, il n'y avait pas de charrette. Pour

nous, tout était extraordinaire, car nous n'avions jamais vu ça. (Oumar / est. 70 / m / Ml / I 15 / L 65-68)

Interviewees particularly highlight the infrastructure development, such as electricity, modern toilets, buildings, etc. that has taken place mainly during the last decades due to the influence of the migrants' money. The cash from earlier migrations moreover corresponded to the increasing demand for financial means, a consequence of increasing monetisation and development (e.g. for schools and health infrastructure).

Dans mon village, il n'y avait pas d'électricité, les maisons étaient faites en paille avec des barbelés. Mais maintenant ça a changé, ceux qui avaient voyagé reviennent et construisent des maisons en dur, y installent de l'électricité et construisent aussi des toilettes modernes. (...) Vous savez ça fait longtemps qu'on fait de l'agriculture et cela n'a jamais rien changé. Si ce n'était pas grâce à l'émigration, tous ces changements n'auraient pas eu lieu. En tout cas si j'observe, malgré le fait que je suis très jeune, tous ces changements ont eu lieu non pas à l'époque où tout le monde faisait de l'agriculture mais au moment où les jeunes ont commencé à sortir pour aller travailler. (Aliou / 36 / m / Sn / I 33 / L 109-120)

The differences in wealth between migrants and “simple farmers” was not only highlighted in the qualitative interviews, particularly from Senegal, but was also obvious during the field work. Households with international migrant members seemed to be particularly wealthy compared to other households in the community. But migration is not only a means to improve the economic well-being of the migrant and her/his family. Successful migration can result in social upward mobility and allow a lifestyle for the migrant and the household that a farmer would not be able to afford.

Oui bien sûr [que la migration a changé qqc, author], si tu regardes bien tu sauras qu'un simple paysan ne peut pas construire les bâtiments que vous voyez ici. (Group / male village elders / Sn / I 22 / L 131f).

The economic success of earlier migrants and their contributions to the economic well-being of the household and community development also changed people's attitudes towards migration and created a positive image of the migrant. The interviews suggest that today the positive view of migration in both study areas results primarily from the economic advantages that migration can offer.

À l'époque (...) les gens du village étaient hostiles à l'idée de sortir pour aller travailler ailleurs. (...) Avec la réussite des gens qui étaient partis travailler, les mentalités ont commencé à changer et les anciens ont compris que sortir pouvait offrir de réelles perspectives de réussite pour les jeunes du village. (Aliou / 36 / m / Sn / I 33 / L 55-57, 103-106)

However, the positive effect of migration and the economic success of the migrants also contributed to the fact that households and communities often expect their members, particularly young men, to migrate and to contribute to the household's well-being and the development of the community. Those who refuse to migrate are often considered lazy.

À l'époque, les gens n'étaient pas habitués à partir. Maintenant les quelques-uns qui ont commencé à partir, reviennent propres, avec des habits. Ils sont un peu civilisés. Donc c'est ce qui a commencé. Actuellement, c'est comme une obligation, parce que les gens sont habitués et il n'y a rien. Il n'y a rien à faire ici. (Oumar / est. 70 / m / MI / I 15 / L 59-63)

Although some people might be expected to migrate, the interviews suggest that the economic advantages offered by labour migration and the positive image of the migrants actually generate aspirations among young people to leave the rural areas. People often wish to copy the migrant success story or simply want to be able to afford the same as others. Interviewees report that seeing what other household, community or peer members were able to afford had caused them to aspire to offer their family a similar or even higher living standard and to be able to live a similar lifestyle as others.

Il y a souvent une sorte d'influence qui fait que si une personne part et revient avec des biens, avec une influence d'autres zones, d'autres personnes veulent le suivre. Les personnes qui restent ici, quand elles partent, elles reviennent avec beaucoup de biens, radios, portables, etc. donc à la prochaine saison, les autres personnes l'année suivante vont le suivre, l'imiter. (Baba Yatta / est. 70 / m / Sn / I 15 / L 45-49)

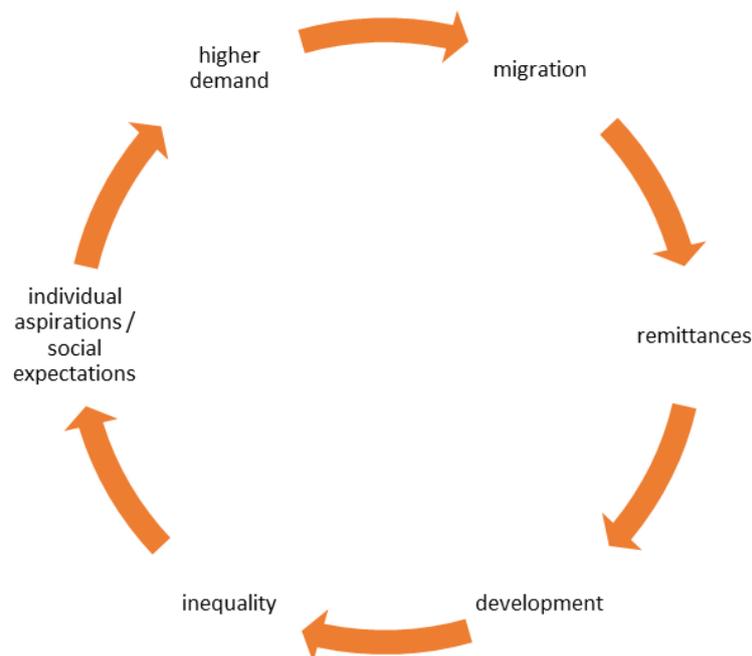
As a consequence, in both study areas, migration has become a common and well-respected activity which is closely related to economic gains and improvement of livelihoods.

Migrants from both study areas explain that the money earned in current migrations is not only targeted at supplementing the agricultural outcome, but also at economizing and investing. Most migrants state that they invest their money in the home communities, in

housing, consumer goods and amenities for their family, in income-generating activities (agriculture or non-agriculture), or even in the development of infrastructure in the home community (e.g. in electricity or education). The money is often invested in the rural areas, not only due to the traditionally strong ties to the home community, but also because the costs for investments in construction are lower than in the city, and investments in the community demonstrate the success of the migrant to other community members.

In sum, both study areas have developed a “culture of migration” which implies that migration is an inherent part of life in both areas and is perceived as a positive and well-respected activity. Figure 29 summarises the finding of this section and illustrates that migration contributes to an improvement in the economic well-being of individuals and of migrant households, and to development, but also creates inequalities or relative deprivation within a household or a community. This in turn leads other people to aspire to achieve the same or a higher lifestyle and perpetuates migration.

Figure 29: Migration as a cause and consequence of inequality.



Source: Author.

Remittances are often invested in the rural areas - indicating that migration is temporary - and increase the household's assets. This is in line with studies on migration in West Africa that report that migrants usually maintain strong links with their home community during migration and return to their village at some point (McDowell, de Haan 2000; Tacoli 2001; Henry et al. 2004). Migrant households are usually wealthier, and wealthier households are presumed to be more likely to have members abroad (Griep 2005; Tsegai

2007; Tacoli 2011c; USAID 2010). However, it is not clear if the economic status of the household is an outcome of migration or a precondition. The interviews suggest that wealth is rather an outcome of migration and that those households that are relatively poor compared to others are relatively poor because their members never migrated or have been less successful than others. However, further research is needed on this.

The migration of household or community members creates social networks which in turn make it more likely that migration is chosen from a set of available (livelihood) activities. An increase of migration is thus not necessarily a result of worsening environmental and socio-economic conditions, as has been assumed in some studies (e.g. Rain 1999; Rademacher-Schulz et al. 2014), but can be linked to economic incentives or the expectation of better economic opportunities elsewhere encouraged by previous migrations and social networks. At the same time, particularly young male household members are often socially expected to contribute to the household's well-being and the community's development (see also Schmidt-Verkerk 2011; Sow et al. 2014). Due to the unequal power relations between young and elderly people, young people often have little choice to stay against the will of the head of the household if there is no profitable local employment available.

The success of previous migrants has not only created a positive image of the migrant but also has demonstrated that migration allows people from poor rural areas to improve their livelihoods, change their lifestyle, and increase their social standing within the household and the community. The increase of individual aspirations and migration moreover, might not only have been promoted by return migrants but also by increased exposure to information about the outside world by means of modern communication as well as better and cheaper transport (de Bruijn, van Dijk 2004).

Even by considering the structural conditions in the sending area and expected opportunities in the receiving area as well as people's capabilities to decide whether to migrate or not, this does not sufficiently explain why some people stay and others migrate. The next section will thus focus on people's preferences and aspirations as main determinants of people's choice to migrate or to stay.

7.3 Individual aspirations as determinants of the migration decision

7.3.1 „Faire la jeunesse“ - Migration to discover the outside world

The environment-migration research focusses mainly on the structural conditions of a migration decision - with environmental factors as the main impact factor. Although studies have started to recognise that individual characteristics also shape the migration decision in areas affected by environmental change, they tend to neglect that individual motives and aspirations might influence the migration decision.

The previous section has illustrated that the success of earlier migrants creates individual aspirations and encourages migration. The desire to adapt a “modern” life style has not only become more important with the success of earlier migrants but also with the opening up of African societies due to modern communication means (de Bruijn, van Dijk 2004; Schapendonk 2010). The wish to realize the same diet, lifestyle, leisure activities and amenities as one’s neighbour, reference group, or society, along with the desire for social prestige, influences individual aspirations and one’s motivation to migrate decisively (Stark, Taylor 1989; Massey 1998; Waddington 2003; Doevenspeck 2011). For example Sow et al. (2014) note in their study on environmental change and migration for Ghana that “Women who return to the community with sewing machines, cooking utensils (often referred to as “silver”), wax prints, a toned skin, skinny jeans and dresses and fanciful hairdos appear modern and enviable. They are accorded the social prestige that is associated with a “successful” returnee. Further, it makes them a favorite of potential suitors and a better candidate for marriage” (Sow et al. 2014: 390). Moreover, the change of lifestyle usually requires an increased amount of money and often breaks with the traditions of their parents (Schmidt-Verkerk 2011).

Although individual migration motives are generally neglected in research on migration from fragile environments, some studies have pointed to the relevance of individual motives in contrast to household needs in such areas in West Africa. Economic independence has been reported as a motive for the migration of young people in Northwest Benin (Doevenspeck 2005, 2011) and a Malian case study finds that young men withhold their earnings from migration for themselves instead of sharing it with the family (Griep 2005). Moreover, “adventurism” and/or experiencing “modern” city life have been acknowledged by several studies as motivating factors for internal and international migration (van Dijk et al. 2001; Schapendonk 2010; Schraven 2010; Schmidt-Verkerk 2011).

In addition, several studies on migration in West Africa indicate that migration of men is a “rite of passage” and part of the transition to manhood (Black 2001; Tacoli 2001; de Haan et al. 2002; Schraven 2010; Sow et al. 2014). Migration thus not only implies prestige but is considered a demonstration of masculinity and of the maturity to be able to work in order to support the household’s livelihood (Sow et al. 2014). As such, it is a well-established activity among people - at least among young men.

Migration also allows greater autonomy for young people, on the one hand due to the distance from parents and the community, and on the other hand due to the possession of one’s own income. For the migration of Dogon women, Petit (1997) notes that women migrate independently in order to “chercher une autonomie plus grande, un affranchissement de la tutelle des hommes et des aine(e)s. Cette émancipation se double évidemment du souhait d’avoir une vie matérielle plus facile, un confort supplémentaire; mais il ne faut pas sous-estimer cette volonté d’affranchissement, volonté d’ailleurs commune aux jeunes hommes” (Petit 1997: 538).

Migration for consumer goods and social prestige, greater autonomy and curiosity

People in both study areas refer particularly to the migration of men as “aller en aventure” [in English: “go on adventure”, author] and to the migration of young men - particularly in Mali - as “faire la jeunesse” [in English: “enjoying youth”; author]. The term “faire la jeunesse” implies the commonness and popularity of migration for young men and its relevance as a “rite de passage”, the transition to manhood. Even elderly men explained that they left to “faire la jeunesse” when they were young, which confirms that the migration of young men is well-established. The term also refers to a greater autonomy of the young people and the social and financial independence from parents and the traditional structures of the home community. Moreover, it implies the search for adventure and to enjoy their youth, as well as the desire to be able to afford fashionable clothes and consumer goods - as the citation of a group of elderly men in Mali illustrates:

En ce temps-là, j’étais jeune, donc je partais pour chercher l’aise, les habits (...) C’était pour l’aise, pour bien m’habiller, pour «faire la jeunesse». (...) Tous les jeunes / Certains peuvent aller et d’autres pas. Tous ceux qui peuvent y aller vont pour bien s’habiller et faire leur jeunesse. (Group / male village elders / MI / I 09 / L 108-115)

The migration of young men is so common in most communities that it has become a habit among the youths who no longer need an explicit reason or motivation to leave their home community.

On le dit toujours, le village c'est pour les vieux hein. Quand tu es jeune, il faut chercher à aller vivre. (Yaya / 30 / m / Ml / I 19 / L 178-179)

The qualitative interviews confirm that young people's aspirations to migrate are often strongly influenced by the success of previous migrations of friends, family and community members. The changes or differences in terms of style (clothing, jewellery, etc.) and consumer goods within a household and a community create aspirations in other members to afford a similar lifestyle and therefore to migrate, because migration often seems to be the only feasible way to realize these aspirations. Migration thus contributes to an increasing desire for consumer goods and a "modern" lifestyle among the young people in both study areas.

Les autres [les petits frères, author] ne pouvaient pas rester parce qu'à chaque fois que je viens ici j'amène des choses et ils les voient et ils ne peuvent pas avoir ici ces choses-là. (Samba / 44 / m / Sn - Dakar / I 01 / L 68-70)

The desire for consumer goods not only encourages young men, but also young women to migrate. While migration of young men has a long standing tradition in both study areas, today the migration of young women is considered "à la mode" in both study areas - as the citation of Khady, a young woman from Senegal, illustrates.

Il y a beaucoup des filles qui vont travailler à la ville, c'est à la mode. (...) Les filles qui sont à Dakar ont de l'argent, elles achètent du matériel, des habits, aident leur famille, celles qui sont là n'ont rien. (...) Celles qui sont à Dakar ont la possibilité d'acheter du matériel, avoir des moyens d'acheter des habits neufs. [Celles qui sont au village, author], elles veulent suivre le même chemin. (Khady / 20 / f / Sn / I 04 / L 91, 106-112)

The interviews with young women show that the money gained in migration is mostly spent on goods for themselves, such as fashionable clothes, jewellery and kitchen equipment, but also for family and friends, especially for those who are not able or willing to migrate. Dogon women, in particular, indicate primarily the preparation of their marriage as the main motive of their migration. The ability to earn their own money, and to afford consumer goods which they can bring back to the village, makes them proud and at the same time increases their prestige and social standing among friends, the household, and

the community and makes them a better candidate for marriage. Korka, a young Dogon woman from Mali, illustrates the importance of consumer goods acquired in migration among peers in her narratives on female migration from her village.

Je n'ai ramené que des «ordures». Les «ordures», ça veut dire l'habillement, les tasses et autres. (...) C'est du partage. Certaines choses sont pour les voisins, d'autres choses pour mon mariage / ce sont aussi des cadeaux. (...) Ce n'est pas l'argent en nature, mais tout ce qu'on cherche, c'est pour acheter quelque chose. Puisque ici, généralement, la gloire se mesure à la quantité de ce qu'on a pour son mariage. Chez nous, on ne dit pas la dot, mais ce n'est pas le mari qui paye, mais celle qui a travaillé à Bamako ou ailleurs. Donc tout ce que j'ai est montré aux autres, tel nombre de tasses, tel nombre de pagnes / Mais ce n'est pas le mari qui a payé ça. C'est moi-même qui ai travaillé pour moi-même / Quelle sorte de marmites, de tasses as-tu... et puis surtout des bracelets en or, des boucles en or, en argent / donc tout ça, ça en fait partir. (...) En général, pour les filles, à partir de 14 ans, tu verras tes amies qui ont amené des habits et tu as aussi envie. C'est pour ça / Tout le monde y va et ramène des habits, je vais aussi ramener la même chose qu'elles. (Korka / 29 / f / Ml / I 13 / L 41-53, 55-56)

The citation illustrates that the migrant's success is measured by the quantity of goods brought back from migration and easily results in a competition among young men and women on the type and quantity of fashionable clothes, jewellery, mobile phones and other goods acquired in migration. The trend of migration among young men and women and the (increasing) desire for consumer goods, however, also have less positive implications. For example, they create pressure among peers to migrate in order to be accepted in the group. The appearance of the return migrants and their accumulated possessions distinguishes them very much from those who do not migrate. As a consequence young people not only want to achieve the same success, but those without migration experience are teased by those with migration experience - as the following citation illustrates:

À moins de 14 ans, tu ne peux rien faire. Tu ne peux pas avoir un bon travail pour avoir de l'argent. Aussi, ici, c'est à partir de 14 ans que les gens commencent à partir. Quand tu as 16 ans, les autres filles de ton âge se moquent de toi à leur retour. C'est pour cela qu'à partir de 14 ans, presque tout le monde y va. (Korka / 29 / f / Ml / I 13 / L 10-13)

Migration of young people, however, is not only or always related to economic gains for the migrant and her/his family, or to social pressure, but is also related to non-economic goals such as gaining experience, satisfying curiosity and seeking adventure.

Non-economic motives, like curiosity and gaining personal experience, also play a role in the migration of young people, both men and women. However, these motives for migration are not new, but have also been relevant in earlier migrations.

Je n'ai pas quitté d'ici parce que je n'avais pas de moyens de rester. J'ai quitté d'ici parce que je voulais apprendre ... découvrir le monde extérieur. J'ai géré on tout cas mon avenir. (Salif / est. 60 / m / Sn - Spain / I 14 / L 38-39)

Men and women who explain that discovering the world outside the village, or visiting a certain city or area, has been one of their migration motives often went to visit friends or other family members, or had heard about a respective city or area and the related style of living from others. The interviews with young and elder people portray their fascination with the perceived excitement of city life in contrast to the calm village life.

Je suis parti parce-que j'ai un frère qu'est allé là-bas [à Bamako, author] et il m'a parlé de la grande ville et moi, je n'ai jamais été et je suis parti. (...) Pour connaître la ville de Bamako et pour apprendre aussi un peu la langue Bambara et pour connaître un peu. (...) Mon frère m'a raconté qu'il y a beaucoup de chose là-bas, les grandes maisons, le climat, comment les gens habitent et que je dois aller les voir et j'ai vu. (Malik / 34 / m / Ml / I 16 / L 12-20)

En ce temps-là, j'entendais parler de Bamako, mais je n'ai-je n'a jamais vu / C'est la curiosité. (...) J'ai entendu qu'à Bamako, on gagne de l'argent, des habits, on voit beaucoup de choses. Donc, j'ai entendu ça et c'est pourquoi je suis partie. (Fatoumata / est. 20 / f / Ml / I 08 / L 39-43)

Moreover, the interviews suggest that people are not only curious to see, but also to learn new things, and therefore engage voluntarily in migration. Besides the economic profit resulting from migration, it is also considered beneficial in terms of gaining life experience and learning skills, such as a language, cooking or a profession. The interviewees portray migration as a means to discover the world outside the village, to getting “civilised”, and as an “école de vie”. Although personal gains, such as learning additional languages or skills, meeting people, and gaining life experience, are often a positive outcome of migration, the expectation of such gains also influences people’s migration decisions.

Oui, si les récoltes sont bonnes certains restent mais certains partent quand même. (...) C'est important car même si tu ne gagnes rien dans ton voyage, dans tous les cas tu vas apprendre quelque chose de nouveau. Certains jeunes, quand ils partent, profitent de cette occasion pour apprendre. (Baba Yatta / est. 70 / m / Sn / I 15 / L 21-23)

The interviews have illustrated that the migration of young people is often motivated by individual economic and non-economic aims. However, the contribution to the household's livelihood can also be a motive or an outcome of migration.

The support of the households needs as a justification for migration

Individual migration motives are not very well-respected in the study areas. Therefore, people tend to indicate structural causes, such as lack of money or food, and to support the household, as reasons for their migration because these reasons are usually more socially accepted than individual motivations, such as curiosity or one's own economic desires. While the migration of young men is well-established and they do not explicitly have to explain their reasons to migrate, the independent migration of young women - particularly in Mali - is still not well-respected.

Young unmarried women from Mali mostly indicate that they have to migrate in order to prepare for their marriage as a result of lacking financial means. However, a further inquiry suggests that preparing for their marriage [in French "la recherche du trousseau", author] seems to be a socially accepted reason for women's migration that often actually aims at postponing the arranged marriage. The interviews suggest that the migration reason "to prepare the marriage" is often used as an excuse for other motives, such as gaining a greater autonomy, experiencing city life, or being able to gain one's own financial means for personal purposes (e.g. fashionable clothes and jewellery), to learn skills, and discover new things outside the village. Particularly the ability to earn money - instead of relying of their mothers or future husbands for financial aid - contributes not only to social prestige and acceptance among peers but also to a greater autonomy and empowerment of the young women.

The citation of Binta, a young unmarried woman from Mali, for instance suggests that migration is a necessity for young women to be able to cover the basic needs.

Tout le monde part quand même pour chercher, ça veut dire qu'il n'y en a pas. (...) Ici, il n'y a pas une famille qui peut payer pour son enfant, qui peut payer la dot, tout ceux dont elle a besoin, parce que quand / c'est comme une nécessité pour la

femme, pour la fille, d'aller chercher quelque chose pour acheter ses besoins.
(Binta / 23 / f / Ml / I 23 / L 68-72)

However, further talks with Binta and other family members suggest that the main reason for Binta's frequent migration to Bamako is the escape from a marriage, arranged when she was six, as the fourth wife of the son of her parents' friends who is a known alcoholic. Moreover, Binta has two little children from a man she got to know in the city and whom she actually would prefer to marry but is not allowed to due to the marriage arrangements with her parent's friends. Against Binta's initial statement, it thus seems very unlikely that she migrates to prepare for a marriage she strongly opposes. Migrating to join the father of her children seems to be a more obvious - but not socially accepted - migration motive.⁵⁹

The need to migrate due to lacking financial means to prepare for marriage seems to be a silent social agreement between men and women in the Dogon country to justify the undesirable migration of women. Since the prohibition of female migration did not work very well, this seems to be a compromise by which the male community and household members can justify the migration of female members without losing face. For men the silent agreement, in contrast to women's violation of the ban, does not undermine their "superior" position. Irrespective of whether this need to prepare for marriage really exists or not, it can constitute an opportunity for young women to expand their capabilities by accumulating access (financial, social, and human capital) in migration.

The migration of young people is often motivated by both individual motives and the need to contribute to the household's livelihood. Although the outcome of migration is often crucial to support the household, the main motivation for migration may often be another reason. The citation of Baba, an elderly man from Mali, suggests that economic independence and the acquisition of consumer goods are important migration motives for young people, and these motives go along with the necessity of providing financial support for the household.

La nécessité n'a de sens que lorsqu'elle a une continuité. Donc il y a l'appât de la nécessité mais il y a aussi cette volonté d'avoir des biens, à cet âge-là, c'est bien d'avoir ça. Sinon on va partir d'ici. (Baba Yatta / est. 70 / m / Sn / I 15 / L 49-52)

⁵⁹ Usually the interviews were conducted in privacy but in Binta's case, her father would not allow it. It is thus not surprising that she did not admit her actual migration motives in the interview her father and other male community members were listening to, but would give a rather socially accepted reason to explain the need of her migration.

Young men indicate that they send part of their income from migration back home to support the household, but also spend a fair amount of the money on consumer goods for themselves, friends or other family members. The cash earned in migration is thus often spent on things for the migrant himself, on “fashionable” clothing, smart phones, motorcycles, and other things that are not available in the rural areas and which improve their social standing among friends and within the community.

Avec ce que j'ai gagné j'ai payé des habilles et des choses pour la famille aussi et j'ai envoyé quelque argent aussi. Et la famille va payer la nourriture et quelque chose pour la famille. (...) Pour moi-même, j'ai acheté des habilles et beaucoup de choses un peu différent, ce qu'il n'y a pas au village. (Malik / 34 / m / Ml / I 16 / L 24-28)

Women do not indicate explicitly that their money from migration is used to support the household's livelihood; however, some explain that they share their income with their mothers.

In sum, the results have shown that the migration of young men and women from both study areas is often influenced by individual motives - both economic and non-economic and individual aspirations and not only by the household's needs and livelihoods. Economic motives include, financial independence, to be able to afford certain consumer goods, and to gain prestige or a “modern” lifestyle, while non-economic motives include curiosity and the desire for greater autonomy, adventure, or to gain experience and to learn skills.

The strong desire for consumer goods and a “modern” lifestyle among young people in the study areas is usually encouraged by the success of previous migrants. This desire for consumer goods and the related social prestige can often only be satisfied by migration. Several studies have described migration as an opportunity to gain economic and non-economic prestige provided equally by cash or consumer goods (David 1995; Kröger, Meier 2003; Meier 2003; de Haas, van Rooij 2010; Sow et al. 2014) or found that the lifestyle of the younger generation had changed compared to their parents (Sieveking, Fauser 2009; Schmidt-Verkerk 2011).

Greater financial independence as a result of migration not only improves people's financial situation but also their power within the household and the community. Financial autonomy contributes to the ability of women in particular, to challenge their low power position - compared to men - within the household and the community. Moreover, this

has positive effects on women's self-image and status, as has similarly been reported in several studies from rural Mali (c.f. Petit 1997; Hertrich, Lesclingand 2012; de Haan, Lakwo 2010 in de Haan 2012: 350).

The migration of young men in the Sahel is a common habit or a "rite de passage", while the independent migration of unmarried women is still less common and less well-respected. Thus individual motives and aspirations are often "hidden" behind other structural reasons for migration, such as a lack of financial means or food insecurity, and thus the need to contribute to meet one's own or the household's basic needs, which are more socially acceptable. This might also be the reason why individual migration motives became obvious in the qualitative interviews while the agreement on individual motives in the survey was rather low, with only 5% of the people indicating curiosity as main migration motive and 8% as a further migration motive. The structural reasons are often used as an excuse to realize individual desires and aspirations, such as a greater autonomy, postponing an arranged marriage or realizing a love marriage, financial independence, experience and curiosity, etc. - far from any controlling influence of their parents or the village community.

Some studies have acknowledged migration as a way to escape from the control of parents and the village community (Leisinger, Schmitt 1995; Tacoli 2002; Griep 2005; Schraven 2010), or to postpone or escape arranged marriages or realize a love marriage (Dougnon 2007; Morrissey 2012a), and suggest that environmental reasons for migration are used as a cover for other reasons (Davies 1996; Gonin, Lassailly-Jacob 2002). Gonin and Lassailly-Jacob (2002) illustrate that migration motives in the Sahel have changed during the last few decades. While migration used to be a necessary strategy to cope with the severe droughts of the 1970s and 1980s, they suggest, that since the 1990s migration has become an excuse to pursue economic aspirations. They note that in the 1990s "les objectifs assignés à la migration ont changé, mais les dernières sécheresses sont gravées dans la mémoire de chacun. Elles deviennent prétextes pour partir. Malgré les possibilités de travailler les champs, ils préfèrent tenter la grande aventure, à l'image de leurs aînés qui ont réussi en migration, c'est du moins l'image qu'ils en donnent lors de leur retour au village" (Gonin, Lassailly-Jacob 2002: 13).

Migration under the cover of socially accepted motives, such as contributing to the households' income, allows people to realize goals that would otherwise elude them, such as satisfying curiosity, seeking adventure, achieving a different lifestyle, or escaping from narrow social norms.

The interviews and literature suggest that besides the variety of economic motives for migration, non-economic motives, such as curiosity, seeking adventure, and learning and discovering new things, have also been relevant migration motives for young people in the Sahel for decades (c.f. Cordell et al. 1996; Hahn 2004; Dougnon 2007; Dias Barros 2012). These motives, however, are widely neglected in approaches that focus on people's economic goals of migration, like the Sustainable Livelihood Approach or the environment-migration research. However, the terms used in the study areas to refer to male migration - "aller en aventure" and "faire la jeunesse" - already suggest that migration is not only a necessity to fulfil the household's needs, but also a voluntary endeavour which reflects individual interests. According to Graw and Schielke the term "aventure" "emphasizes the ability and decisiveness to act, the will to take risks and to realize oneself, rather than expressing the underlying conditions, vulnerabilities or afflictions" (Graw, Schielke 2012: 32).

7.3.2 Aspirations for a better life - Abandoning agriculture

In 2006, the UN news service IRIN published an article entitled "Mankind is like this: one wants to get ahead" (IRIN news 2006). The article tells the story of Mansour, an illegal migrant from Senegal who is desperate to migrate to Europe in order to "get ahead". Although Mansour may not originate from an area that is affected by environmental changes, people in areas affected by climate and environmental changes might similarly aspire to "get ahead". Several studies find that migration - and the influence of earlier migrations and media - contributes to changes in lifestyle (a cultural change) and an increase in young people's desires and aspirations in areas affected by environmental and climate change (Sieveking, Fauser 2009; de Haas 2010; Schmidt-Verkerk 2011).

Migration scholars have illustrated that the relative wealth and success of migrants leads eventually to a taste for consumer goods and a change to "urban" tastes and lifestyles that are difficult to attain through local labour (Massey et al. 1993; de Haas 2010). Thereby it makes the rural way of life less appealing for young people and discourages them from working in traditional sectors and motivates them to migrate instead (de Haas 2010). As a result, young people often are no longer willing to live a rural life and to engage in traditional agricultural work activities, but rather imagine their future through the opportunities that migration offers (de Haas 2010; Schmidt-Verkerk 2011; Morrissey 2012a). Studies illustrate that young people perceive farming as hard work that does not offer enough stable revenues because it is highly dependent on unreliable weather conditions

(Schmidt-Verkerk 2011; Morrissey 2012a). Rural life in general is considered too hard and monotonous (i.e. same food every day and old clothes) (Morrissey 2012a).

Mertz et al. found in their study on climate and adaptation in West Africa that people's main sources of income - rain-fed crops and livestock - had decreased over the past 20 years, while income has increased and is in general heavily migration-based (Mertz et al. 2010). Moreover, they found that people in the driest zone had a "resigned attitude toward crop production" and most households resorted to prayer, increased food purchases and migration (Mertz et al. 2010: 8).

Morrissey observes in his study on Ethiopia that young people "want to attend school and to 'become modern' and/or 'improve themselves' - the latter being a reference to their sense of both their material and social well-being" (Morrissey 2012a: 127). This is because formal education seems to be a precondition for finding better-paid and more urbanized jobs which can advance their aspirations to Western materialism (Morrissey 2012a).

Aspirations for a better life and the retreat from agriculture

The qualitative interviews illustrate that out-migration of young people from both study areas is closely related to economic development for the migrant, the family and the community. Migration, particularly international migration, is mostly perceived as personal and family success and usually goes far beyond fulfilling basic needs. The interviews illustrate that young people from both study areas leave the local small-holder agriculture work and instead search for long-term employment in the cities because work in the cities is often more reliable and more profitable than agriculture work.

The citation of Aliou, a 36-year old man from Senegal, illustrates very well what young people often think about agriculture. Aliou has no formal education and has worked for several years as a mechanic in Dakar. He prefers his work in the city over farming not only because it is more profitable than agriculture but mainly because it is more reliable. The high variability of rainfall and the uncertainty of the yields are considered too unreliable to justify investing in agriculture. Furthermore, agriculture is perceived as no longer profitable enough to allow for a certain lifestyle. Aliou and other young people from the study area even consider the sole reliance on agriculture as irrational and a waste of time. The success of earlier migrants has shown and encouraged others to migrate in order to accumulate money and other assets and improve their standard of living.

Que Dieu me pardonne les propos que je vais tenir, mais je pense que nos parents qui sont au village ont échoué leur vie à cause de l'agriculture. Ils cultivaient pendant l'hivernage et vivaient des récoltes au jour le jour sans penser investir ou construire des maisons. C'est pourquoi d'ailleurs ceux qui étaient restés sont aujourd'hui les plus pauvres. Et c'est d'ailleurs la raison pour laquelle les jeunes veulent sortir du village pour aller travailler. (...) Vous savez, même si toutes les conditions étaient encore réunies pour une bonne agriculture, je ne pense pas que je laisserais mon commerce pour une agriculture qui n'a aucune garantie. (...) Et tout jeune qui veut vraiment construire son avenir devrait sortir du village pour aller faire autre chose que l'agriculture. Parce que l'agriculture ne permet plus de vivre convenablement. (Aliou / 36 / m / Sn / I 33 / L 51-56, 64-66, 81-83)

The last part of Aliou's citation illustrates that agriculture is not a realistic means for young people to achieve a better life. A higher living standard or a different lifestyle is difficult to achieve without migration because the local market offers few - and often not well-paid - employment opportunities. Migration seems for many people to be the easiest, most effective, or only solution to move out of poverty and not only improve her/his own and the family's economic situation and social standing, but also to generally succeed in life.

Most interviewees, both young men and young women, indicate a preference for work in the cities, claiming that the work is less hard than the work in the rural areas. Women in particular liked that their work in the cities is defined and paid by working hours and is acknowledged by others.

Puisque ici [au village, author], tu travailles, mais tu ne sais même pas ce que tu fais. Tu passes toute la journée à travailler, mais tu ne sais pas si c'est une perte ou un bénéfice. Mais là-bas [dans la ville, author], tu travailles et tu reçois quelque chose par mois. Tu manges aussi bien, puisque ce ne sont pas les mêmes aliments que nous mangeons. (...) Le travail au village est plus difficile que le travail là-bas [à Bamako, author], puisque là-bas, le travail est par moments. Ce n'est pas comme ici. Ici, c'est tout le temps. (Korka / 29 / f / Ml / I 13 / L 69-72, 75-76)

Moreover, the interviews suggest what the survey results have shown above (see Chapter 6.1), that people, both men and women, with a high level of education are more likely to engage in non-agricultural activity. One elderly man from Senegal even notes that only the "stupid" one's and those who did not succeed in school stay in the village, while the

smart people leave. Particularly, boys and girls with a secondary education or higher have far better employment and vocational prospects elsewhere than in the structurally weak study areas.

Particularly among the Senegalese interviewees, many young men aspire for success, which implies gaining enough money to pay for a “Western” lifestyle for themselves and their families by migrating either within the country, or internationally to Europe or to the USA.

The citation of Moustapha, a young man from Senegal who migrates periodically to Italy since the beginning of the Millennium, illustrates that migration, and particularly international migration, implies more than a need to support the household. Moustapha’s migration to Europe was strongly related to his wish to be successful and to become “somebody”. This at the same time seemed to be difficult to realise in Senegal. Despite his formal secondary education, Moustapha argues that it would have been difficult to find well-paid employment at home that would have permitted him to gain an equal amount of money as a job in Europe. Therefore, migration seemed to be the better option to realise his dreams and aspirations.

*Pourquoi Europe... comme on le disait qu’il y a le travail là-bas. Et, comment dirait, la vie est différent de ce qu’on vie ici. Ici tu peux travail un mois ou deux mois et tu gagnes rien ou tu gagnes un peu. Peut-être en Europe ce que tu gagnes ici dans un mois tu peux le gagner en Europe dans une journée. Avec tout ça et plus... (...)[Les raison pour le voyage c’était, author] L’influence des gens et de plus la vie ce qu’on vie ici. Parce que maintenant au Sénégal si on dit la vérité il y a des personnes qu’ont étudiées beaucoup, beaucoup, avec des licences mais il ne trouve pas du travail. Tu as beaucoup de diplômés mais tu n’as pas le travail que mérites quelques diplômés, alors c’est à cause de ça j’ai me dit. **C’est que je veux faire**, ça sera très difficile de rester ici. (...) Même si c’est difficile, moi, je me disais, moi, c’est que m’intéresse, moi, je veux **devenir quelque chose**, je veux satisfais les besoins de ma famille et les besoins de moi-même. (...) Ce que m’a posé d’aller en Europe c’était pour aider ma famille. (...) Moi, mon objectif était de **réaliser quelque chose** et c’est plus facile en Europe. (Moustapha / 34 / m / Sn - Italy / I 23 / L 20-24, 29-32, 49-50, 53-55, emphasis by author, Interview conducted in French)*

Against the current view in literature that international migration is only available for the better-off, the interviews show that international migration can be a possible means to succeed in life for young people from poor families who often lack formal education. In

Senegal, social networks turned out to be more important as a precondition for international migration than financial means. When the lack of formal schooling or qualification makes a well-paid job outside the agricultural sector inaccessible, for some people international migration seemed to be the only option to improve the economic status and social standing of themselves and their families. However, international labour migration depends on a lot of other factors, such as visa availability, and was – according to the interviewees with international migration experience - often related to a very high risk and suffering.

La première raison [pour laquelle je suis parti, author] est que je viens d'une famille modeste. (Mamadou / 48 / m / Sn - Italy / I 24 / L 82)

For the Malian interviewees, in contrast, international migration seems to be out of reach for most people due to a lack of financial means and social networks. Thus, for people from the Malian study area, the desire to succeed in life is related to a closer migration destination, Abidjan in the Cote d'Ivoire.

Aspirations as determinants of people's decision for or against migration

People have different skills and abilities, preferences, ideas and ambitions, dreams and aspirations. The interviews illustrate that professional activities as well as living and working locations are chosen in line with these categories, which the author will refer to as aspirations. However, due to the lack of employment opportunities in the rural areas, the preferences for a location and a profession often are incompatible.

With respect to the living environments, some interviewees highlight the calmness, the cheaper living costs, and solidarity of village life, and being close to their family as advantages of the rural areas, while others highlight the opportunities, the type of work (less hard than agriculture) and the exciting lifestyle as advantages in urban areas. With respect to the economic activity, some people indicate that they prefer agriculture as a professional activity, while others find it tiring and ineffective and prefer a job outside the agricultural sector, such as business. The choice of the economic activity depends on different aspects, such as the competencies, education, preferences, the type of work, and the related aspirations and goals that migrants want to achieve, as well as on the availability of a profession or employment.

Most of the young interviewees preferred employment outside agriculture, and were therefore usually required to migrate. However, the case of Modou, a 30-year old Senegalese farmer, illustrates that not all young people prefer to migrate to the cities. Modou's

choice to stay in the village is strongly linked to his wish to be close to his family and to his aspirations to become a successful farmer:

J'ai choisi de rester parce que je ne pas veux être loin de ma famille. Ainsi, mon ambition c'est de cultiver et de faire de l'élevage c'est pourquoi je reste au village. Je veux devenir un grand agriculteur, l'idée de pouvoir quitter le village ou voyager ne m'a jamais traversé la tête. Mes frères ne voulaient pas rester parce que dans le village il n'y pas d'infrastructure en eau ou en électricité c'est pourquoi certains jeunes partent ailleurs pour découvrir d'autres localités et gagner leur vie. (...) Je n'ai jamais parti parce que cela ne m'intéresse pas. (Modou / 30 / m / Sn / I 19 / L 36-40, 56)

Moudou's brother, however, prefers to work in business and accepts having to migrate to Dakar even though he would prefer to stay in the rural area, close to his brother and parents.

Je préfère le commerce parce que j'ai grandi dans ce milieu. (Bassirou / 30 / m / Sn / I 20 / L 49)

His brother supports the household with cash from migration which enables Modou and his parents to stay in the rural area. In addition to farming, Modou works as a guardian close to the farm. However, his case seems to be an exception among the young people from both study areas.

The previous sections have shown that livelihood diversification is crucial to support the household and that families are usually divided into two groups: those who stay in the rural areas and those who migrate. Who migrates and who stays is not only determined by the structural conditions and people's capability to decide freely between staying and migrating, but also by personal preferences and aspirations. The capability to decide freely between staying and migrating is often influenced by various factors, such as the composition of the household (e.g. number of male members of working age), the social norms related to migration (e.g. restrictions on women to migrate on the one hand, and expectations on men to migrate on the other hand), or responsibilities for the household (e.g. oldest son usually has to ensure the household's livelihood). However, if people have the capability to choose, the decision on who migrates and stays is mainly influenced by people's individual preferences and aspirations. Household members, however often migrate in turns - depending on their preferences and responsibilities.

Les gens qui rentrent à l'hivernage n'ont pas quelqu'un pour cultiver. (...) Dans notre famille, il y a cinq personnes, des hommes. Nous avons décidé qui part et qui reste au village par hasard. Si quelqu'un veut partir à l'aventure, donc tu pars. (...) Les grands frères partent et les petits restent. Les petits peuvent venir quand la culture est finie. (...) Il y a des gens qui viennent ici [à Bamako, author]. Il y a un frère qui ne viendra pas ici. Il veut toujours rester là-bas. (Seydou / est. 45 / m / Ml / I 25 / L 262-264)

C'est comme la fin d'un match de football certains sont avec le troupeau à Kaolack, d'autres jeunes du village sont à Dakar faire le commerce et d'autres font du business à un peu partout à travers le pays, donc chacun vraiment analyse selon ces compétences ou selon là où il est à l'aise, il va dans ce sens. (Aly / 63 / m / Sn / I 06 / L 79-82)

The citations show, that the income generating activities of the people from both study areas are manifold and take place at different locations.

In sum, the interviews illustrate that people have different aspirations and preferences related to a living environment (rural or urban), occupation, and lifestyle, and accordingly decide whether to migrate or not - provided that they have the capability to decide freely between migrating and staying.

Many young people prefer to migrate in order to work outside the agricultural sector, indicating that the work is hard and the revenues are highly unreliable due to the unstable environmental conditions. Moreover, the findings indicate that the outcome of agriculture no longer meets young people's demand for consumer goods and their expectations for a certain lifestyle. Young people from both study areas often prefer an alternative employment which is less climate-sensitive and uncertain and more profitable than agriculture. However, others who prefer to continue agriculture, may not have the capability to do so due to the uncertain environmental conditions.

The increasing reluctance among young people to pursue agriculture and the rural lifestyle seems to be a result of increasingly difficult environmental conditions, such as the highly variable rainfall and resource scarcity, but is also influenced by the change to lifestyles which require more financial resources that cannot be acquired through agriculture alone. Migration has thus become an important, and sometimes the only, way to improve the economic well-being and prestige of oneself, the household, and the community and to fulfil needs, desires and aspirations.

Young people's lower dependency on agriculture, or their abandonment of agriculture, might be considered adaptation strategies of young people in response to unfavourable and unstable farming conditions, but are certainly also signs of cultural and social change. Due to a lack of local employment opportunities, migration - whether preferred or not - is often the only option for people to get ahead, and to realize their aspirations. International migration in particular, with its high costs and risks, is related more to the desire to succeed in life than to structural constraints such as environmental conditions or changes. It nevertheless also mostly serves to support the household. International migration from Senegal to Europe has been depicted as sign of personal success by the interviews and several studies (c.f. Riccio 2005; Carling et al. 2013).

The reluctance among young men to engage in farming as well as people's individual motives for their migration from environmentally fragile environments has been reported in a few recent case studies on the environment-migration nexus. Morrissey, for example, describes the migration motive of young people from an environmentally fragile area in Ethiopia as "liveability" which includes the undesirability of rural livelihoods and the flight from rural poverty, monotony and hardship (Morrissey 2012a: 121). In addition, the EACH-For case study report on Ghana notes that "some migrants indicated that it was impossible to make enough money out of farming to attain their ambitions, for example to build a 'modern' house" (van der Geest 2009: 2).

Nevertheless, individual motives and aspirations have been widely neglected in the research on the environment-migration nexus. This is particularly due to the focus on households rather than individuals, as well as on the structural conditions and economic goals for the migration. Several scholars on the development-migration nexus have been calling for a better account of individual choices in migration research and for more detailed research on the views and aspirations of the labour migrants (e.g. de Haan 1994; Massey 1998; de Haas 2010; Bakewell 2010). The environment-migration research should thus consider both individual motivations and aspirations and the structural conditions in home and destination area as determinants of the migration decision in order to better understand migration in general, and from environmentally fragile environments in particular.

7.4 Chapter conclusion: The interdependence of social-ecological conditions and aspirations

This chapter has shown in detail how environmental and socio-economic factors as well as individual aspirations influence the migration decision in areas affected by environmental change. The structural environmental and the socio-economic conditions are strongly interdependent with respect to the migration decision in both study areas. This is particularly the case in Senegal. To emphasise this interdependence this thesis has referred to these structural factors as the social-ecological conditions of migration. The social-ecological conditions include the environmental conditions and food security but also social and cultural norms, social inequalities and the development situation on-site.

Although these conditions certainly influence the migration decision and determine people's capabilities to choose between migrating and staying, they cannot explain sufficiently why some people migrate from an area affected by environmental changes while others do not. Therefore, research has to consider people's individual preferences and aspirations with respect to the migration decision because they determine if migration is chosen from a set of available activities.

Table 11 summarises the different drivers of migration identified for both study areas in the analysis of the quantitative and qualitative data.

Table 11: Drivers of migration in the study areas.

	Drivers of migration	Detailed aspects
Social-ecological conditions of migration	Small-scale and subsistence agriculture and pasture conditions more difficult	<input type="checkbox"/> Seasonality - no work in agriculture during the dry-season <input type="checkbox"/> Low and uncertain yields due to: <ul style="list-style-type: none"> ○ Increasingly variable rainfall and overall reduction in net precipitation during the rainy season ○ Decreasing soil fertility ○ Crop pests (mainly Senegal) <input type="checkbox"/> Lack of financial means to invest in agriculture (in seeds, fertiliser and material) <input type="checkbox"/> Lack of fertile land due to population growth (only Mali) <input type="checkbox"/> Extreme events such as droughts (and floods in Mali)
	Lack of infrastructure and employment opportunities	<input type="checkbox"/> Seasonal work in agriculture decreasing (due to lower agricultural outcome) <input type="checkbox"/> Lack of industries and services in the communities and the regions => no alternative employment opportunities outside the agricultural sector

		<input type="checkbox"/> Lack of accessible schools (particularly for secondary education) <input type="checkbox"/> Lack of formal education makes it difficult to obtain (well-paid) work outside the agricultural sector
	Influence of previous migrations	<input type="checkbox"/> Social inequality in social standing and economic situation in the family or community <input type="checkbox"/> Positive assessment of migration and perpetuation through social networks (culture of migration) <input type="checkbox"/> Social expectation and pressure on young men to migrate so they might contribute to the household livelihood and economic development of the community <input type="checkbox"/> Increasing living standards and demand for consumer goods <input type="checkbox"/> Trends and peer pressure among young men and women <input type="checkbox"/> Social change towards a “modern” lifestyle
Individual aspirations and preferences	Increased aspirations and needs – particularly among young people	<input type="checkbox"/> Aspirations to earn one’s own money and to improve the economic situation and social standing <input type="checkbox"/> Preferences for a certain work, living environment or lifestyle - often different to those of their parents <input type="checkbox"/> Unwillingness to work hard in agriculture for little revenue <input type="checkbox"/> Increasing desire for consumer goods and a “modern” lifestyle <input type="checkbox"/> Achieve greater autonomy and escape the narrow traditional social norms <input type="checkbox"/> Postpone or avoid arranged marriage <input type="checkbox"/> Aspirations to succeed in life and to “get ahead” <input type="checkbox"/> Discover the world outside the village, gain experience and skills

Source: Author.

The migration motives of people are manifold and strongly depend on their social characteristics, such as age, gender and the level of education, but also on the environmental sensitivity of the economic activity. Migration behaviour in both study areas is strongly shaped by the seasonality and the high variability of rainfall as well as a lack of local employment and social norms. The lack of local employment opportunities in the rural areas has been described for Senegal as “the biggest challenge faced by the populations who are no less committed to their land” (Fall et al. 2010: 39). In addition, the decision is influenced by the impact of the success of previous migrations and inequality, but also by people’s individual aspirations.

The unfavourable conditions might contribute to a need to migrate for some, but migration seems to be voluntary in most cases. Migration usually takes place independent of the quality of rainfall and yields - mostly as a “routine” economic activity -, but people respond to acute environmental stress by leaving earlier and/or staying longer in migration as well as by sending additional household members on migration. The need to migrate is sometimes even used as an excuse to justify a migration that is motivated by individual motives which are less socially acceptable in the home communities.

Environmental factors play a much more important role for migrations from the Senegalese study area - where rainfall is on annual average 100mm lower than in the Malian study area. The most likely population to be affected by environmental changes is married middle-aged male farmers with no or a low level of formal education because they are usually highly dependent on the natural environment, have little prospects for well-paid non-agricultural employment, and at the same time are traditionally responsible to ensure their household’s food security. For people, who prefer to stay in the rural area and to live on farming, life is very likely to become increasingly difficult and will greatly rely on the support of other migrant family members. The migrant’s support of the household is crucial to most families in the rural areas, although it might not be the main driver of migration.

However, migration shapes the social-ecological conditions as much as they shape people’s migration behaviour. Mobility has always contributed to changes in cultures (Hahn 2013). Scholars have argued that migration should be considered as an integral part of broader social transformation processes or to include social transformation by explaining migration by applying structure and agency (structuration) (Bakewell 2010; Castles 2003, 2009, 2010, 2012; Portes 2010; Van Hear 2010). While social changes on the one hand influence migration behaviour, migration on the other hand influences social change and transformation processes – by either re-enforcing traditional norms and by establishing new ones (de Haan 2000; Van Hear 2010). Forms of social transformation in developing countries include - among others - the destruction of rural livelihoods, erosion of local social orders, and rural-urban migration (Castles 2009). Rural-urban migration in development countries is driven by the erosion of older forms of rural production and the growth of new urban opportunities (Castles 2012).

Young people often have greater aspirations for a better life and a “modern” lifestyle and higher levels of formal education. Consequently, agriculture is no longer an attractive

activity for many of them. The withdrawal of young people from agriculture and the increasing importance of the remittances in contrast to the revenues from agriculture suggest a decline in agriculture in the study areas. This might shift the reliance on the household's own food production to an increasing reliance on purchasing food in order to ensure the household's food security (see also Sen 1981; Bryceson 2005). In addition, the character of migration may shift from its original purpose as a seasonal supplemental activity to agriculture to a temporary or permanent migration to urban areas.

In order to make predictions of the impact of climate and environmental changes on human mobility, it is important to consider the social factors that might aggravate or slow down the effects on people's mobility. Young people's increasing levels of education, lessening dependence on agriculture of the well-educated and the lower agreement to "food security" as a migration motive suggest that young people might become less vulnerable to environmental changes in the future even though the environmental conditions might worsen.

8 Conclusion: Capabilities and aspirations to explain the environment-migration nexus in the West African Sahel

8.1 Main findings and their contributions to the research on the environment migration-nexus

The goal of this thesis has been to provide a better understanding of the linkages between climate and environmental change and migration in the West African Sahel. Based on the empirical evidence from two rural areas in Mali and Senegal, the present thesis argues that migration from areas affected by slow-onset environmental change is often not a household adaptation strategy due to livelihood stressors in the home area - as this is suggested in literature (e.g. Black et al. 2011b; Adger, Adams 2013; Ober 2014). Instead, individual motives and aspirations as well as better opportunities elsewhere are important drivers of migration in the region.

Existing cases studies on the environment-migration nexus in the Sahel mostly come to the same unsatisfying conclusions that migration is multi-causal and complex. As a consequence they often fail to deliver concrete empirical results on the linkages between environmental change and migration in the present and in the future or the results differ considerably between the case studies (e.g. Meze-Hausken 2000; Mertz et al. 2011; Morrissey 2012a). In contrast to these studies, this thesis illustrates that - although environmental conditions shape migration in the region - environmental stress plays a relatively small role as a driver of migration. This applies particularly to Mali, where environmental reasons are considerably less important as migration motive than in Senegal. Moreover, it argues that by considering social trends and transformation processes, the impact of environmental factors on people's migration could decrease even though the environmental conditions might worsen due to climate change.

The findings are a result of a different approach on the environment-migration nexus: Firstly, this thesis focussed on the individual as the main unit of research - in contrast to the household that constitutes the focus of many development and environment-migration studies.

Secondly, unlike other studies on the environment-migration nexus, it did not try to analyse how and to what extent identified climate stressors are likely to affect migration. Instead it assessed the role of the environment and food security in the migration decision relative to other migration motives, according to the following research questions: What

are the reasons for migration in the two study areas? What role do environmental factors play in the decision? What role do social and individual aspects for migration play?

Thirdly, the approach not only considered people's reasons to migrate, but also their reasons to stay – which have been hardly considered in case studies - guided by the following research questions: Why do some people migrate and others stay in areas affected by environmental change? How do social inequalities shape the objectives and capabilities to migrate or stay?

As a theoretical contribution to the environment-migration research, this thesis provides a new conceptual approach, which shall be labelled “the Capability and Aspirations Approach”, for a better understanding on the linkages between the environment and migration in general and for the West African Sahel in particular. It claims that research should consider - in addition to the household's needs and the unfavourable social-ecological conditions in the home area - people's capabilities to migrate, their individual aspirations and migration motives as well as the relative opportunities elsewhere and broader social transformation processes.

Household versus individual perspective

Today, research on the environment migration nexus considers migration mostly as a household adaptation strategy in response to environmental changes and the household's needs. This focus however, neglects the intra-household power relations and that people have different migration motives - as this has been shown in the critique on household studies by critical feminist development and migration scholars (e.g. Chant 1992b; Ruppert 1998; de Haas, Fokkema 2010). In contrast, the focus of the analysis on individuals in this thesis - rather than on households - has been vital in identifying unequal power relations between household members with regards to age and gender as well as individual motives and aspirations as key determinants for the migration decision of young people. Moreover, the focus on individuals takes into account that people's freedom or capability to migrate and to stay differs considerably between household members.

One of the main findings of this study is that migration is often an individual decision - although other household members might be informed beforehand. The decision often neither matches the will of the head of the household as the most powerful decision-maker nor is in the best interest of the household as a whole - as this is usually assumed in literature. Another important finding that derives from the individual perspective is that the migration motives are manifold and not always related to economic gains. Although the financial support by the migrants is crucial for most households, this is often not the

main driver of migration. The motives differ along individual characteristics and often involve individual goals. Moreover, the need to migrate due to unfavourable conditions in the home areas seems even to be a welcome, while socially accepted, excuse - particularly by (Malian) women - to justify their migration which is often motivated by individual motives.

In sum, the results suggest that the clinging to the sole focus on the household and its economic needs in the environment-migration nexus will not lead to a more profound understanding of the linkages between environmental change and migration. Further research should thus ideally consider both the household and the individual perspective. The findings suggest - as this has been shown by the UNDP report (2009) - that the decision to migrate is often a decision between a necessity and an opportunity, between risk and economic success, as well as between the need to support the family and to realise an individual's own aspirations.

Staying versus migrating

During the last decade there has been a noticeable shift from a focus on migrants to "trapped" people - those who are not able to migrate - as the most vulnerable to environmental stress in recent literature (e.g. Black et al. 2011b; Black et al. 2011a; Foresight 2011; Adger, Adams 2013; Adger et al. 2014; Black, Collyer 2014; Ober 2014). However, in contrast to the frequently recited argument that the poorest people often lack the ability to migrate, the findings suggest that people are "forced" to migrate rather than to stay. The recent positive view in research on migration as an adaptation strategy and on "trapped" people as the most vulnerable tends to lose sight of the people that are forced to migrate.

Moreover, it is important to distinguish if people want or need to migrate or to stay (Black, Collyer 2014). The findings highlight that people's capabilities to choose between migrating and staying as well as people's aspirations and preferences decisively determine the migration decision. In focusing on people's capabilities and preferences, this thesis shows that the reasons and the level of choice to stay differ considerably between men and women. While men often stay out of choice, women often do not have the freedom to choose to migrate due to social norms - including traditional gender roles and the related negative social image of independent female migrants. In contrast, men are often under pressure to migrate in order to contribute to the household's livelihoods. This illustrates that the capability to stay or to migrate often is determined by social norms and power inequalities rather than by environmental stress.

If people have the capability to choose freely between migrating and staying, it is usually their aspirations and preferences that determine the decision. While some people prefer to stay for reasons such as being close to their family, liking the calmness of the rural area or being attached to land and agriculture, others decide to migrate for manifold reasons, such as improving the livelihood of the household, being successful, preferring a “modern” urban lifestyle or a more stable and profitable employment than agriculture. A preference to migrate seems to be more likely at a young age - while it might become either less likely or a more necessary after having founded a family.

The impact of environment factors on migration

The migration behaviour in both study areas is strongly shaped by the seasonality of rainfall and the lack of local employment opportunities - thus the social-ecological conditions in the home area. This has also been illustrated in other case studies on environment and migration in the region (e.g. Doevenspeck 2011; van der Geest 2011; Rademacher-Schulz, Salifu Mahama 2012). High variability and lack of rainfall and its impact on people’s food security are the main stressors in both study areas while other environmental stressors differed considerably between the two study areas: crop pests are major livelihood stressors in Senegal, while the lack of fertile land due to population growth stresses people’s livelihoods in Mali. Although, the climatic and environmental conditions seemed to be quite similar at the beginning, research in the two study areas provided surprising and strongly contrasting pictures on the impact of environmental factors on people’s migration motives and patterns. In the Senegalese study area - where rainfall is on average 100 mm lower per year than in the Malian study area - food security plays a much bigger role in the migration decision than in Mali. In general, however, environmental factors or food security are much less important as direct causes of migration than other - particularly economic - migration motives.

Seasonal migration, however, is a common “routine” economic activity and supplemental to agriculture (Ellis 2003; Foresight 2011). It takes place irrespectively of the quality of the yields. Households are often divided in two groups: migrants - who engage in a non-agricultural activity elsewhere throughout the year - and non-migrants - who stay in the rural areas or only migrate seasonally. The decision of who migrates and who stays is strongly influenced by people’s individual preferences and aspirations; migration also often takes place in turns. The diversification of income ensures the households’ liveli-

hoods. In terms of stress, people respond by leaving earlier and/or staying longer in migration, sending additional household members in migration, or increasing the financial support of the migrant family members.

The findings show that environmentally-induced migration is predominantly short-term (3 to 9 months), but in contrast to the findings of other studies (c.f. Rademacher-Schulz, Salifu Mahama 2012), not necessarily short-distance. While migration caused by environmental factors is primarily internal - short and long distances - in Senegal, in Mali people also migrate across national borders, with the Cote d'Ivoire as main destination. The migration to other continents like Europe or America is, however, rare.

The vulnerability to environmental stress strongly depends on people's individual and social characteristics. It primarily affects households with few male members in working age. Environmental changes are most likely to affect married middle-aged male farmers with no formal education or a low level of education. This is primarily because they usually are highly dependent on the natural environment and have little perspective for well-paid non-agricultural employment. At the same time, they are traditionally responsible to ensure their household's food security.

What do the results mean for the impact of environmental and climate change on future migration in the areas?

Like other recent studies (c.f. Bremner, Hunter 2014), the findings suggest that the predictions of millions of displaced people by climate change entering Europe are oversimplified and very unlikely. Migration in the area is a common pattern and will take place independently from environmental stressors but - as hitherto - will take place mainly within the country or within the sub-region. Environmental stressors are likely to determine people's duration of migration, their migration motives and the need to migrate. The natural scientific results on the rainfall trends in the Sahel are still highly uncertain (IPCC 2013). However, even if the environmental conditions worsen, they might become less meaningful for migration in the study areas in the future against the backdrop of other social transformation processes.

Social transformation as a decisive factor

Although Castles has already claimed, more than a decade ago, to embed migration in social transformation processes (Castles 2003, 2009), this has hardly been realised in case studies on the environment-migration nexus. The focus on the push-factors of migration

in the environment-migration research neglects that people often migrate towards opportunities rather than away from problems – as this has been acknowledged by migration scholars (Klute, Hahn 2007; Meyerson et al. 2007; Tsegai 2007; Adamo 2008). Although it is generally agreed that factors related to the region or country of destination, such as the availability and demand of employment or higher wages, are drivers of migration, they are often ignored by research on the environment-migration nexus which still tends to focus on the “push-factors” of migration (Faist, Schade 2013). In contrast to most other studies on this issue, this thesis has considered the broader social context and social transformations processes and how they might affect people’s vulnerability to climate and environmental change and their migration decision.

The success of previous migrants’ increases people’s living standard but also their demand for financial means, consumer goods and a different lifestyle. Since the uncertain and often less profitable yields from agriculture do not (alone) fulfil these demands, young people tend to leave the rural area for a longer time period to find stable and better-paid employment in urban areas. This has been sporadically detected by other studies (e.g. Sieveking, Fauser 2009; Mertz et al. 2010; Hertrich, Lesclingand 2013) Moreover, the trend towards better education, the decreasing dependence on the natural environment, and an increasing reluctance to work in agriculture by young people that became apparent in this study suggests that the role of (small-scale) agriculture might continue to decrease in the future. As a consequence, these social transformation processes might reduce the impact of environmental factors on the migration decision - irrespectively of the worsening of the environmental conditions due to climate change.

Acknowledging individual aspirations: The problem of different conceptions of migration in the “North” and in the “South”

Individual aspirations are important drivers of youth migration all over the world. And the findings suggest that individual aspiration also play a decisive role in the migration decision of young people from rural areas in Mali and Senegal. This thesis argues that research often applies different standards to the analysis of migration in the “North” and in the “South” and, as a consequence, largely ignores individual motives and aspirations in the research on the environment-migration nexus, (particularly) in developing countries. The migration motives of young people from the study areas often do not differ much from those of young people in the “North” - although in the “South” they might be accompanied by a certain need or social responsibility to migrate. Indeed, research tried to overcome the “sedentary bias” (Bakewell 2008) in Western development discourse by

acknowledging the important role of migration for development instead of trying to reduce or prevent it. However, modern discourses of migration in Africa still frame migration as a desperate move to escape poverty or forced migration as a consequence of violence, global forces or environmental stress (Bakewell, de Haas 2007). At the same time the mobility discourse in „Northern“ countries is shaped by the opinion that to be modern means to be mobile⁶⁰ (Bauman 1994: 241).

The different notions not only apply to the framing of migration in “developing” and “developed” countries but also to the acceptability of certain migration motives. The rural exodus of young people in “Northern” countries is strongly related to individual motives and opportunities elsewhere, such as higher education, better job opportunities, or different lifestyles than their parents, and thus is strongly encouraged. In contrast, rural exodus in the “South” is still considered a need to improve unfavourable conditions in the sending area. Considering migration (only) as a household adaptation strategy to unfavourable living conditions and environmental stress denies any form of individual motives of (young) migrants in the “South” who might have similar aspirations and migration motives as young people in the “North”. People in the “North” AND in the “South” might want “to get ahead”. This is not to say that migration from rural areas in developing countries is not driven by environmental stress or other unfavourable conditions, but that people often have non-economic and/or individual migration motives that research has not considered. Migration - even if it is a livelihood strategy - is inseparable from individual aspirations and preferences.

8.2 „The Capability and Aspirations Approach“: A new framework for a better understanding of the environment-migration nexus

8.2.1 Capabilities and aspirations

The new conceptual approach - “the Capability and Aspirations Approach” developed in this thesis aims at contributing to a better understanding of the linkages between the social-ecological conditions and migration in the context of slow-onset environmental changes. The Capability and Aspirations Approach is based on current concepts on the environment-migration nexus and on a combination of development frameworks, the Sustainable Livelihood Approach (and attempts of further development of the SLA) as well

⁶⁰ „Moderne ist die Unmöglichkeit, an Ort und Stelle auszuharren. Modern sein bedeutet in Bewegung sein“ (Bauman 1994: 241).

as on Amartya Sen's Capability Approach (c.f. DFID 1999a; Sen 2000). Therefore, it contributes not only to the research on the environment-migration nexus but also to the migration and development research. The author argues that these two fields of interests are closely related to each other because the development context determines whether environmental factors do have an effect on people's migration decision.

By embedding the environment-migration research in a theoretical framework inspired by the Capability Approach and the Sustainable Livelihood Approach, the focus was directed towards people's capabilities to stay and migrate. The focus on individuals and their capabilities and preferences and aspirations to migrate (or to stay) has been helpful in drawing attention to the aspects that go beyond most of the existing approaches on the environment-migration nexus. This includes the importance of individual aspirations versus household needs, the importance of social transformation processes and the differing notions of migration in the "North" and in the "South".

People's capability to choose freely between migrating and staying includes the potential of human agency in migration from areas affected by climate and environmental change (Schade 2013). If people do have the capability to do things or to achieve different functionings, the selection of a certain action from the capability set occurs according to people's needs, preferences and aspirations. The focus on capabilities helps distinguish between people who decide actively to migrate and to stay and people who need to migrate or are "forced" to do so, who have been labelled as "involuntarily immobile" (Carling 2002) or "trapped" (Foresight 2011). These people have to stay or migrate against their preferences and aspirations.

In the situation of environmental change according to Black and Collyer "low levels of capital indicate both high vulnerability to crises and low ability to move away" (Black, Collyer 2014: 54). Considering that poverty and vulnerability to environmental stress can be both an obstacle to migration and a root cause of migration (Skeldon 2002), this thesis suggests that low levels of capital indicate a low ability to choose freely between migrating and staying rather than (only) a "low ability to move away". At the same time it argues – in line with Briones (2009) – against Schade's statement that "to be mobile - whether practiced or not - is an expression of capability" (Schade 2013: 239) by considering that mobility can be an expression but also a lack of capability to stay. People who lack the capability to stay are usually depicted as "forced" migrants in the environment-migration research. With low levels of capitals people are less entitled or capable to choose their action with regard to migration in the context of environmental change.

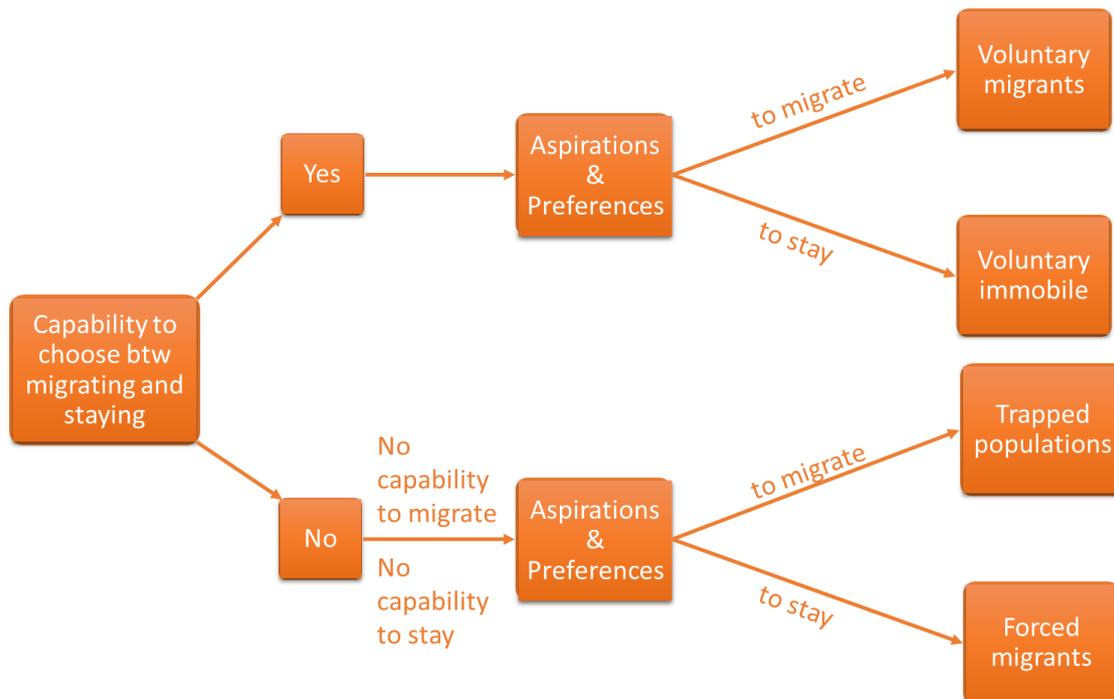
Differentiating people's migration behaviour by their capability to choose freely between migrating and staying AND their aspirations and preferences results in different types of people with respect to the migration "decision":

- 1) People who do have the capability to choose freely between staying and migrating - they usually decide by their preferences and aspirations for one or the other activity, and are either "voluntary migrants" or "voluntary non-migrants".
- 2) People who do not really have a choice but whose (only) possible option matches their preferences - they might not perceive themselves as being deprived of entitlements.
- 3) People who do not have the capability to choose between migrating and staying and whose preferences and/or aspirations are opposing the only available option - this includes those who are "forced" to migrate and those who are "trapped".

Figure 30 illustrates the different types of people by their capability and preferences to migrate or to stay, with type 1) reflected in the upper branch, and type 3) in the lower branch.

The figure shows that it is important to distinguish between not wanting and not being able to migrate or to stay - although this might be difficult in the context of slow-onset environmental changes. Even if the decision to move may technically be "voluntary", poor people may have no feasible alternative to migration (Ellis 2003; Waddington, Sabates-Wheeler 2003).

Figure 30: The influence of capabilities and aspirations/preferences on the migration decision and the voluntariness of migration.



Source: Author.

The degrees of voluntariness between type 1 and 3 are manifold and should be imagined as a continuum (see also Hugo 1996; Hummel et al. 2012). For instance: somebody might prefer to stay in the rural areas but employment elsewhere might offer more options than low-paid local employment. Although the person chooses to migrate, the degrees of freedom might not be the same as it would be for somebody who aspires to leave the rural area. People's preferences for a location or an activity and their individual aspirations for the future with respect to an occupation, lifestyle or economic situation might not be congruent and might require compromises, but nevertheless their migration will imply a certain level of choice and agency and thus have a voluntary character. A special case is the example of young women from the Dogon country who are often deprived of their capability to migrate due to social norms but escape secretly.

People's migration that can be assigned to type 3, however, does usually not imply any kind of agency. Most migrations from the study areas have a voluntary character. People whose migration can be considered a last resort either had to migrate during the severe drought in the 1970s or had been stricken by a combination of environmental stress, a high dependence on farming, little assets (e.g. no education) and unfavourable social conditions, such as no other male members in the household.

8.2.2 Application of the “Capability and Aspirations Approach”

The *social-ecological context* represents the macro-level perspective of the new approach (see Figure 31). The seasonality of rainfall and the lack of alternative local employment, but also other factors, such as a high population growth and a lack of additional accessible fertile land, a non-(labour)migration culture of women among the Dogon and the Fulani ethnicities and increasing development - mainly initiated by the cash from migration - shape the social-ecological conditions or context in the study areas. The social-ecological context determines people’s capabilities as well as their preferences and aspirations to migrate and to stay and indirectly also the outcome of the decision. Environmental factors thus constitute only one aspect - among others - that shapes this context. In contrast to the “vulnerability context” in the SLA, which only refers to people’s livelihood stressors, the social-ecological context includes in addition, conditions that might positively influence people’s livelihoods and reduce their vulnerability to environmental changes. It acknowledges that it is not satisfactory to focus on local (environmental) changes in the sending area, but that these changes and their impact on people’s capitals have to be considered in a broader social context, including the relative opportunities elsewhere.

A person’s *capabilities* to choose between migrating and staying or other livelihood activities depends on different factors: her/his individual characteristics, her/his own and the household’s capitals at the meso-level. The findings indicate that *individual characteristics*, such as age, gender, marital status, ethnicity or the level of education shape the capability to decide between migrating and staying decisively: Women - particularly from the Dogon and Fulani ethnicities - often do not have the capability to choose migration as an option, while young men are often expected to migrate in order to contribute to the household’s livelihoods and thus do not have the choice to stay. A high level of education usually postpones the moment of the first migration and facilitates it due to better prospects to well-paid employment. More important, it strongly influences the migration motives: better educated people, more often, migrate for education or vocational reasons than for economic reasons which makes it less likely that their migration is a livelihood activity or an adaptation strategy in response to unfavourable conditions or external stressors.

In contrast to the current frameworks on the environment-migration nexus, which suggest that individual characteristics influence the migration decision directly (c.f. Black et al. 2011a; Foresight 2011; Warner et al. 2012b), the new conceptual approach highlights that individual characteristics influence the capabilities to choose between migrating and stay-

ing and the aspirations prior to the actual decision. This emphasises that individual characteristics are related to different power implications which in turn have a considerable impact on people's capability to migrate.

The new approach takes into account the five forms of *capital* suggested by the SLA which can refer to the individual's and the household's capitals. The *financial capital* decisively determines the decision to migrate in the two study areas. Money is required to complement agriculture and improve the household's livelihoods. In contrast to the dominant view in literature, the findings of this study suggest that financial capital does not necessarily determine whether people are able to migrate or not but defines whether migration takes place voluntarily or not. The findings show, that the poorest need to migrate rather than being "trapped".

Climate and environmental change are likely to destroy the *natural capital*. Due to people's strong dependence on the natural environment this also affects the financial capital as a consequence. The decreasing dependency on the natural environment - due to the enrolment in alternative employment and the substitution of the agricultural yields by cash from migration - might reduce the relevance of the natural capital.

Physical capital, including productive assets, such as land, tools, and cattle are assumed to determine if additional income from other sources is needed. The diversification of income is very common in both study areas and the migrants' financial support is a crucial supplemental activity to agriculture for most households. The migrants' money often contributes to the accumulation of physical capital, such as houses and community infrastructure, animals or tools. A good community infrastructure that includes health and education infrastructure and access to water and electricity can alter people's migration motives. Good transportation and information through communication infrastructure can facilitate migration. Extreme events can affect the physical capital, i.e. heavy rainfalls and floods have destroyed buildings, roads and bridges in Mali in the year 2011.

Human capital includes skills, education, and health status as well as the composition of the household. Education, knowledge, and skills increase people's options to work outside the agricultural sector and therefore reduce vulnerability to environmental and other external risks (e.g. Francis, Hoddinott 1993; Cutter et al. 2003; Foresight 2011; Ellis 2003; van der Land, Hummel 2013). While education facilitates migration, the findings of this thesis suggest, in contrast to some studies, that it does not so much influence the likelihood of migration but the migration motives. In turn, experience, knowledge, and skills (i.e. learning a new language or other practical skills) are often both drivers and

outcomes of migration which in turn can benefit the migrant, the household, and the community. Human capital also includes the composition of the household - number of male and female members and the number of people in working age - and the respective labour power. Large households with several men in working age can more easily compensate the absence of other migrant members. Moreover, a high number of (male) household members in working age reduces the pressure to migrate and increases the choice for migrating or staying depending on the individual preferences.

Social capital, especially in the form of social networks, facilitates migration and reduces the costs and risks of labour migration by providing access to accommodation and employment at the destinations (Massey et al. 1993; de Haas 2010). The findings suggest that although social capital is not a requisite for migration in general – as this is presumed in literature (e.g. de Haan 1999; Skeldon 2002; Black et al. 2011c; Tacoli 2011b), it seems that international migration (to Europe and the USA) strongly depends on social networks. For internal or sub-regional migration, social networks usually influence the choice of destination. Moreover, migration is more likely if it is considered a desirable activity in the community or the peer group. This not only shapes the individuals preferences but can result in an enormous pressure to migrate. In literature, human, social, and financial capital is often assumed to have the biggest effect on the migration decision. However, the findings of this study have shown that they are more likely to influence the migration motives, the character of migration (as opportunity or necessity), and the migration patterns than the decision to migrate itself.

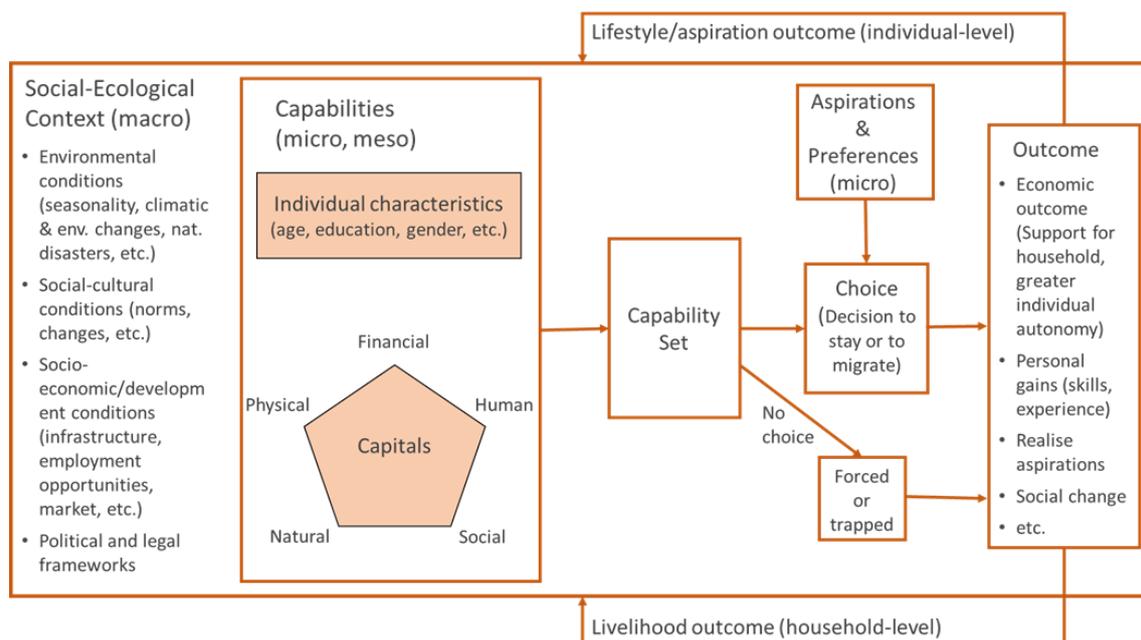
In the social-ecological context, people's individual characteristics and their capitals determine their *capability set*, which determines if migration and staying are available options. The *individual preferences and aspirations* are shaped by the social-ecological context and often depend on the individual characteristics. The preferences and aspirations usually determine the final migration decision if both options - leaving and staying - are available, although they might be inspired by altruism. In contrast to the current environment-migration frameworks, the new approach highlights individual preferences and aspirations – and not individual characteristics – as final determinant of the migration decision. Thereby it includes that migration in areas affected by environmental changes is not necessarily a household coping or adaptation strategy based on economic considerations but is also influenced by individual aspirations. The focus on households and the concept of migration as a livelihood or adaptation strategy in response to environmental stress, however, leave little room for non-economic and more individual migration motives that

might contrast the household's expectations on the goal of the migration of its members. However, the findings show that not all people in the study areas can freely decide whether to migrate or not. In most of these cases it is a combination of structural environmental, economic and social factors and individual aspirations that determine the "decision". The new approach acknowledges the findings of most studies on the environment-migration nexus in the Sahel for which social and individual aspects have a considerable impact on people's migration behaviour – which is often greater than the impact of environmental stressors.

The *outcome* of this decision usually affects the household level and the individual level - economically but also in terms of gained knowledge and experience. Therefore it is important to give more importance to the individual and her/his capability and aspirations related to the migration decision. Ideally, research should consider both, the individual and household perspective. The outcome, as a result, influences the social-ecological context and people's capability - in a negative or positive way – and might lead to social change.

Figure 31 illustrates the new conceptual approach developed in this thesis to analyse the environment-migration nexus. The new approach constitutes a generic tool to analyse the environment-migration nexus at the local level as well as on a national, regional, and global level.

Figure 31: “The Capability and Aspirations Approach” to analyse the environment-migration nexus.



Source: Author.

8.3 Implications for research and policies

8.3.1 Implications for further research and the concept of the “environmental migrant”

The findings of most case studies on the environment-migration nexus that migration is multi-causal and complex is unsatisfying. Case studies with a local focus are important for a more detailed understanding on the local level. However, it is also important to develop conceptual and methodical standards for the research applied on the environment-migration nexus. This would foster comparison studies on different local levels and from different regions of the world in order to identify generalisations and local specifications. New standards could be realized for similar environmental changes or - which is certainly more challenging - for the broad variety of slow-onset environmental changes.

What follows from the findings of this thesis for further research on the environment-migration nexus is that research should consider:

- the diversity of migration drivers and motives, including opportunities elsewhere, non-economic motives and individual motives and aspirations - in addition to the households needs,

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- people's capabilities to choose between migrating and staying and how individual characteristics and social inequalities influence the decision,
 - the broader social context and transformation processes because they do not only influence the migration decision, motives, and patterns but can also affect the vulnerability to environmental stress and the migration decision, and
 - that migration might be conceptualised differently in the "South" and in the "North" and try to overcome these different notions consolidated in the research in developing countries.

The findings suggest that including the individual perspective into further research is vital to get a holistic and realistic picture on what influences migration in areas affected by environmental change. The assumption that the households' needs is the main driver in fragile environments might be misleading. Thus, it is necessary to identify the variety of migration motives that influence the decision. But migration motives that are not (or less) socially accepted - often individual motives - are usually difficult to identify. This has an impact on the research methods applied. To identify the "true" hidden motives for people's migration, further or in-depth investigation is needed and it is essential to interview the migrants themselves in privacy. The head of the household might not know or not reveal the real migration motives of the different household members. Furthermore, his presence might influence the response. Qualitative (in-depth) interviews with the migrants themselves seem to be the most effective method to get a realistic picture of what actually shapes people's decisions.

This thesis found - in line with other studies (e.g. Henry et al. 2004; Doevenspeck 2011; Tacoli 2011c; van der Geest 2011) - that social and development factors as well as individual characteristics and social inequalities shape the migration decision more decisively than environmental factors. Further research should thus not only focus on the environmental and economic push-factors of migration but also consider the opportunities elsewhere, i.e. for employment, gains, experience and a greater autonomy, and the individual aspirations and motives to migrate. Social transformation and development processes might compensate the effects of environmental changes on migration in the future. Research should thus include indicators of social change and development, such as education, population growth or changes of values, norms and lifestyles, and their - positive or negative - influence of the environmental and their impact on people's livelihoods. This

would improve the development of future predictions compared to the unsuccessful attempts to estimate the number of environmentally-induced migrants.

The term “environmentally-induced migration” implies that environmental factors are the main determinants for people’s migration. Although migration patterns in the Sahel are certainly shaped by the harsh environmental conditions in the region - as the seasonality and high variability of rainfall - the migration of most people cannot clearly be identified as a response to environmental stress. Instead, the causes and motivations of migration in areas affected by slow-onset environmental changes have been shown to be manifold and intertwined. The classification of migrants as “environmental migrants” relates - according to de Haas - to a general problem of the use of conventional categories to classify migrants (e.g., economic, refugee, asylum, family, student) which primarily reflect bureaucratic and legal categories and conceal the often complex, mixed and shifting motivations of migrants (de Haas 2010).

Moreover, most definitions, such as the often cited IOM (2007) working definition of an environmental migrant,⁶¹ only refer to changes in the environment as a driver of migration and not to the fact that the environmental conditions might become increasingly unfavourable due to social changes and economic development of the society. People who migrate in search for alternative employment opportunities because the yields do not correspond anymore to the higher demand of financial means and the aspirations to a better life are thus difficult to classify under the label “environmental migrants”. A better understanding of the complex relationship between climate and environmental change and migration is not only of interest for academia but also for development agencies and policy makers at a local, national, and global level.

8.3.2 Recommendations for policy makers and development agencies

Several policy recommendations can be derived from the results of this study. In order to reduce people’s vulnerability to climate and environmental change, policies and development projects should, on the one hand, improve the unfavourable social-ecological conditions in the areas in order to improve the situation for those who want or need to stay and, on the other hand, facilitate migration for those who want or need to migrate. This

⁶¹ IOM’s definition of environmental migrants: “*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) (see also Chapter 2.2).

requires policy and interventions in several areas of concern as well as on different levels that take into account the different needs and requirements. Based on people's capabilities and aspirations, different policies and activities should aim at facilitating migrating and staying. Overall, the findings suggest that a high number of displaced people caused primarily by climate and environmental change is very unlikely in the West African Sahel - if policies and food management are effective. A high number of international migrants, who leave the African continent is particularly unlikely. Thus, policies and action should focus on the internal or intra-regional migrations.

Improving infrastructure and services in order to create local employment and to make rural life more attractive for young people

The impact of environmental stress on people's livelihood strongly depends on their vulnerability to this stress and on the development situation in the area. According to the findings, economic reasons are the main drivers of migration in both study areas that primarily result from the seasonality of rainfall and the lack of local employment opportunities at the same time. Promoting rural development and local employment is thus one of the most urgent and probably most effective actions to reduce the necessity to migrate for those who prefer to stay in the rural areas. A prerequisite for investments in income-generating activities and job creation is a good and reliable infrastructure and services which are both widely absent in the rural areas in Mali and Senegal: Electricity and running water supply are still rare and unreliable if existent; health and education infrastructure are poor on the community level and often even in the nearby towns; the quality of streets and the transportation infrastructure are poor in both study areas - particularly in Senegal - with many communities experiencing access difficulties year-round and particularly during the rainy season; and the mobile phone networks are poor with little-to-no signal in many communities. Internet is rarely accessible and if so, it is unreliable and expensive. These basic infrastructure endowments, however, are preconditions to draw investors into the rural areas and/or enable people to run their own businesses to make life in the rural study areas more pleasant and attractive.

A better local infrastructure is not only important to make migration less necessary but also to improve the opportunities for young people and to make the rural areas more attractive place to live. Particularly young people have an increasing desire to live a lifestyle different to those from their parents and aspire to have access to certain goods, fashion, mobile phones, media, internet etc. in order to feel as a part of the global world. The lack of infrastructure, however, reinforces the fact that most desirable consumer goods and

amenities are not accessible on-site and furthermore, generates the feeling of isolation from the rest of the country and the world. As long as young people are denied good services, attractive employment, and the access to global goods and a “modern” lifestyle in the rural areas, they will certainly continue to leave for urban areas. People might migrate despite local employment opportunities if economic incentives are higher or opportunities are better elsewhere, but the decision to migrate would be one of free choice.

Providing insurance to compensate for losses in yields in the case of extreme weather events and ensuring access to investment capital

Against the backdrop that most people are still highly dependent on the natural environment, effective strategies to cope with and adapt to environmental changes and the high variability of rainfall are crucial to ensure people’s food security. An effective action to reduce farmers’ vulnerability to environmental stress is to elaborate and offer insurances that aim at compensating for losses in the event of major environmental shocks. Policies or interventions can be most effective by considering local differences with respect to livelihood stressors: Crop pests, for instance, have been identified as a major threat on people’s livelihoods in Senegal, while the lack of access to fertile land and population growths have been major concerns in Mali. While the prevention and fight of crop pests, such as locusts, crickets and bugs, requires rapid action, the issue of lacking access to land as a consequence of population growth, in contrast, requires long-term policies and actions. However, environmental change is often not the problem itself, but it has effects on economic exchange conditions, such as changes in relative prices, that can lead to an “economic emergency” and famine (Sen 2000). Offering people access to investment capital might be one option to enable them to invest in farming and livestock in order to reduce their vulnerability to external shocks.

Improving access to (higher) education

The results have shown that people with a high level of formal education are less dependent on the natural environment and thus less vulnerable to environmental stress. On the one hand, a higher level of education reduces the likelihood for boys and girls to migrate at a very young age in search for job opportunities and, on the other hand, increases people’s options for a well-paid employment outside the agricultural sector. Providing access to formal education - particularly higher education at the secondary and tertiary level - and a good quality of education does not only require an adequate education infrastructure but also qualified teachers. Qualified teachers, however, are very unlikely to come and

stay in the rural areas if no good infrastructure is present - which relates to the first area of concern. In addition to a good infrastructure and adequate education policies, the parents' positive attitude towards education is crucial to support education. Otherwise, they might continue obliging their children to work on the fields and force the girls to get married at a young age, instead of letting them attend school. Raising awareness on the positive impact of education on their children's future (professional) opportunities and financial support for those who cannot afford to pay for learning materials can be supporting activities. Policies designed to promote and facilitate formal education are particularly crucial for young people who want to or have to leave the agricultural sector as a consequence of environmental changes in order to find an alternative well-paid employment. In the long run, these policies can reduce people's vulnerability to environmental stress and prevent young people from migrating which, at a very young age, can often leave them illiterate with fewer opportunities for a well-paid job.

Facilitating migration and the search for employment and accommodation for those who want or need to migrate

Last but not least, earlier studies and the discussion on the definitions and legal frameworks of environmental refugees and environmental migrants have suggested that it will be difficult to provide legal protection for "environmental migrants" - particularly those affected by slow-onset environmental changes. Predominantly because migration mostly takes place internally and because the migration is usually not only and often not even primarily driven by environmental factors. In the West African Sahel, migration is a well-established activity and many people will probably continue migrating - even if the conditions in the rural areas remain constant or improve.

Policies and actions should improve the conditions to migrate and facilitate migration for those who want (or still need) to migrate. This is particularly important for those who migrate at a very young age without social networks and little financial means as well as for those who do not have the families' or communities' support and thus escape secretly. These people are particularly at risk and need support in the search for employment and accommodation when first arriving to the urban areas. Providing information centres and/or contact points for migrants could reduce their risk of been a victim crime - the risk is particularly high for the very young (female) migrants - or to end up in miserable living conditions. Facilitating people's migration would be an effective activity to support their coping with and adapting to environmental stress and therefore prevent later displacement. Another positive effect of migration - and a reason for supporting it - is its positive

impact on development in the home community and improvement in living conditions due to the migrants' financial support as well as the transfer of valuable knowledge and skills to the rural areas at their return.

8.4 Limitations and further prospects

The conceptual approach developed and applied in this thesis contributes to a better understanding of the linkages between the environment and migration in the Sahel. Nevertheless, it has some limitations that have to be considered.

This thesis has some methodological limitations that already have been described in detail in chapter 5 but nevertheless shall be summarised briefly at this point. First, the author cannot rule out the possibility of biases in the data resulting from the translation of the qualitative and quantitative survey from French into the local languages and back. Although the interviews were conducted in French - without a translator - whenever this was possible, most of the rural interviewees did not speak French, but a variety of local dialects despite the relatively small local study areas. Secondly, the collection of representative data in a narrow statistical sense was not feasible due to the difficult conditions in the rural areas, limited financial and time resources, and the snowball sampling as the only available methodical option to select interviewees from the rural study areas in the capitals. It is thus possible that the people interviewed and surveyed were the most open-minded ones towards research and "foreigners"⁶² which might have had an effect on the results. However, the comparison with national survey data shows that the results give a realistic picture of the situation. Thirdly, the author and interviewer is a "white" woman, a fact which might have had an effect on the answers given since "white" people are in the perception of the rural population in both study areas linked to development aid projects and money. The author has tried to limit this effect by highlighting in the beginning of each interview that the research is not related to any development intervention and that the response will have no implication with respect to future development projects or money. Being female, however, often facilitated access to interviews with women.

Moreover, the thesis focuses on two local study areas in the West African Sahel and provides a very detailed analysis of the migration processes and the linkages between the environment and migration in these areas. The comparison of the two different study areas

⁶² The survey has been conducted with the help of Senegalese or Malians but they came mostly from an urban area and thus might have been considered "foreign" by the rural survey participants.

has shown that the migration decision and the impact of environmental factors of this decision highly depends on the geographical position and its specific environmental conditions as well as on the specific local cultural and social norms. Despite the advantages of a local approach, it has limitations in terms of the generalisation of the results. However, the comparison of two study areas in a similar geographical region provides an indication on which findings are generalizable - at least for the West African Sahel - and which findings are specific for a certain location or ethnicity. Despite the local level of the analysis of this study, the new conceptual approach presented above allows for a generic application on different countries and regions. However, the findings and the conceptual approach refer to the linkages between migration and slow-onset environmental changes and might not be applicable for research on natural disasters.

All in all, this thesis offers valuable conclusions on the environment-migration nexus in the West African Sahel and a new innovative conceptual approach to better understand the impact of environmental factors on migration now and in the future.

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Glossary of acronyms

ANSD	<i>Agence National de la Statistique et de la Démographie, Senegal</i>
BMBF	<i>Bundesministerium für Bildung und Forschung; German Federal Ministry of Education and Research</i>
CA	<i>Capability Approach</i>
DFID	<i>British Department for International Development</i>
ECOWAS	<i>Economic Community of West African States</i>
EU	<i>European Union</i>
FDI	<i>Foreign Direct Investment</i>
GDP	<i>Gross Domestic Product</i>
GPCC	<i>Global Precipitation Climatology Centre</i>
HDI	<i>Human Development Index</i>
IDS	<i>Institute for Development Studies</i>
INSTAT	<i>Institut National de la Statistique du Mali</i>
IOM	<i>International Organization for Migration</i>
IPCC	<i>Intergovernmental Panel on Climate Change, Intergovernmental Panel on Climate Change</i>
ISOE	<i>Institut für sozial-ökologische Forschung, Institute for Social-Ecological Research</i>
LARTES/ IFAN	<i>Laboratoire de Recherches sur les Transformation Economiques et Sociales/ Institut Fondamental d’Afrique Noire, University Cheikh Anta Diop of Dakar, Senegal</i>
LDC	<i>Least Developed Country</i>
MEA	<i>Ministère de l’Environnement et de l’Assainissement, Mali</i>
MEF	<i>Ministère de l’Économie et de Finances, Senegal</i>
NAPA	<i>National Adaptation Programmes for Action</i>
NELM	<i>New Economics of Labour Migration</i>
NGO	<i>Non-Governmental Organization</i>
ODA	<i>Official Development Assistance</i>

REMUAO	<i>Réseau Migrations et Urbanisation en Afrique de l'Ouest</i>
SLA	<i>Sustainable Livelihoods Approach</i>
SÖF	<i>Sozial-ökologische Forschung; Social-Ecological Research</i>
TRMM	<i>Tropical Rainfall Measuring Mission</i>
UK	<i>United Kingdom</i>
UN	<i>United Nations</i>
UNDP	<i>United Nations Development Programme</i>
UNEP	<i>United Nations Environment Programme</i>
USAID	<i>U.S. Agency for International Development</i>
WBGU	<i>Wissenschaftlicher Beirat Globale Umweltveränderungen</i>
WCED	<i>World Commission on Environment and Development</i>

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