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The environmental factor in migration dynamics – a review of African case studies

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Abstract

Claims that climate change will shape the future of global migration are continuously being made in academia as well as popular and policy circles. This paper questions the empirical basis for such claims, drawing on a critical review of 13 case studies of environmentally induced migration in the Sahel and the wider migration and development literature. It highlights some of the conceptual and methodological flaws that recur in many of these studies. First, their terminology is often confused, with concepts such as environment and climate, change and variability being conflated. Second, some do not acknowledge the extreme climate variability and unstable environments that are the norm for many Sahelian people; in this context, mobility can be a successful coping mechanism, potentially reducing environmental stress. Third, the paper criticises the use of static push-pull frameworks which suggest that migrants are being ‘pushed out’ of marginal and degraded environments, neglecting the intertwined environmental, political, economic and cultural factors. Fourth, the paper highlights flaws in the sampling and questionnaires used, particularly in some of the more recent studies. In conclusion, the paper calls for more open research that explores the complex inter-relationship between environmental factors and mobility rather than starting from the assumption of a simplistic causal relationship.

Keywords: international migration, environmental change, Sahel, case studies, review

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Introduction¹

This paper is about the (potential) place of the environment in migration studies. There are two broad underlying concerns that have motivated the writing of this paper.

Firstly, as part of the general debate about the potential impacts of climate change on human society is a concern that such changes could lead to an increase in international migration, particularly displacement of people from the poorer parts of the world. This raises various policy questions around a number of issues, including environmental protection, migration management, protection of displaced people, and development issues in a globalizing world. While international migration and climate change are each in their own right political issues of high priority, the potential combination of these processes in the form of “climate-induced migration” is receiving increasing attention from the media, policy makers and practitioners who want to plan for future responses. These concerns tend to dominate the current debate on the relationship between the environment and migration.

Secondly, theories of migration that go beyond simplistic Malthusian and push-pull frameworks have not dealt very explicitly with the natural and environmental factors in migration dynamics. Stephen Castles has argued that environmental factors are part of a complex pattern of multiple causality, in which natural and environmental factors are closely linked to economic, social and political ones; and that this complexity needs to be better understood, both on empirical and conceptual levels (Castles 2002: 5). Findings from such studies will be in high demand, both to inform the above-mentioned debate, and to develop more encompassing and complex frameworks for studying and analysing migration.

This paper is mainly concerned with academic perspectives on the environment-migration nexus. The paper builds on a critical review of thirteen empirical case studies of the environmental change-migration nexus in Africa, and discusses methodological, conceptual and definitional issues identified in these studies. It is worth mentioning that the reviewed papers were not chosen from a larger amount of studies, but that this was the actual sample that a search for empirical case studies on Africa yielded². Very few case studies are written by people who have actually spent time in the field and who draw on empirical material. Moreover, the studies on Africa all happen to be biased towards the Sahel. The search for papers made it clear that, while there are a number of interesting case studies on the dynamic and reciprocal relationship between the environment and migration, which provide insight into the complex relationship between these phenomena, empirical evidence that specifically documents how environmental change affects migration dynamics is very hard to come by. Other material on environment-migration interactions includes studies on: the impact of migration upon the environment (Black and Sessay 1997; de Haas 2001; Garcia-Zamora, Perez-Veyna et al. 2007); return migration or resettlement of people displaced by natural disasters (Falk, Hunt et al. 2006); explanations of why people do not move from environmental disasters or environmentally hazardous areas

¹ The author would like to thank Prof. Stephen Castles, Dr. Oliver Bakewell and Dr. Hein de Haas for their inspiration and mentoring, as well as their helpful comments and suggestions in the preparation of this paper. Thanks are also due to my father, Peter O. Jonsson, who helped me by sharing his professional insight and experiences in environmental issues and international development. I dedicate this paper to him.

² The author would be grateful to have any sources that were nonetheless overlooked drawn to her attention.

(Goldhaber, Houts et al. 1983); migration from human created hazards, such as nuclear waste (Greenwood, McClelland et al. 1997); factors determining land use in Africa, including mobility but also other factors (Guyer, Lambin et al. 2007); and migration during the Holocene 8,000 years BC (Gupta, Anderson et al. 2006).

This paper draws on current migration studies, which consider human mobility as involving varying degrees of both force and willingness, depending on the interplay between agency and structure in the contexts that people move within. Hence, this paper is not so interested in the controversial label of “environmental refugees” and does not want to single out “environmental migration” as if it is something particular or different that cannot be dealt with within the current framework of migration studies. At the same time, this paper acknowledges that the environment plays a role in social processes, such as migration, and it will therefore try to suggest how migration studies might benefit from taking this neglected aspect into account.

This paper is not limited to a focus on climate change, but deals with the broader notion of the environment. Many changes in the Sahelian environment cannot simply be blamed on the climate. Socio-political factors such as misguided development strategies, unequal distribution of power and resources, conflict and lack of rights are part of the explanation for why people have been victims of drought and famine. Climate is only one aspect of the environment. The concept of ‘the environment’ includes both the natural, built and social surroundings. Humans directly experience their environments and through their agency, they modify their environments. The natural, built and social aspects of the environment are intricately linked and this complicates the task of separating “natural” causes of migration from social causes. The idea of an environment lacking any effects of human activity is largely an analytical construct, and humans always have affected the ecosystem of the area which they inhabit (cf. Blaikie and Brookfield 1991)³.

In contrast to the environment, which is something that directly affects people, ‘the climate’ is much more abstract: it encompasses the statistics of numerous meteorological elements in a given region over long periods of time (usually 30 years)⁴. Many of the studies reviewed in this paper are concerned about climate change in the Sahel. However, one important distinction that some scholars tend to misunderstand is that between climate *change* and normal climate *variability* (also referred to as internal variability). Natural climate variability is long-term, normal statistical fluctuation in climate that occurs without human interference. For example, natural variability of rainfall in the Sahel was very large during the 20th century. However, climatologists do not know whether the climatic patterns of the Sahel are caused by global warming, or if they are just a protracted natural cycle; nor is there certainty or agreement as to whether overall rainfall in the Sahel is increasing or decreasing⁵ (Olsson, Eklundh et al. 2005; Gianninia, Biasuttia et al. 2008).

³ Blaikie & Brookfield (1991) argued that almost all natural landscapes are being continually modified and part of them degraded – but that this should not necessarily cause alarm, because land degradation and “eco-disasters” have occurred over thousands of years and even before human use became a serious contributory factor.

⁴ Climate should be contrasted to weather, which is the present condition of these meteorological elements over short periods not exceeding a few days to weeks.

⁵ I would like to thank Dr. Fai Fung for pointing this out. See also the following report by IRIN news: <http://www.irinnews.org/Report.aspx?ReportId=78514>

Patterns of movement related to environmental factors: Evidence from Africa

Conceptual Framework for Review of Case Studies

The following review looks at local case studies from Africa. The selection of these case studies was based on a search for articles in English and French examining environmental factors in migration dynamics in Africa. Potentially significant writings that may have been conducted in other languages are not included in the review. Moreover, the review deals with papers that do not merely focus on displacement, but which consider migration more broadly.

These search criteria yielded a limited number of studies, which mainly focus on the Sahel region, especially countries in West Africa. The environmental factor considered in the studies is mostly drought. This regional and thematic focus is not arbitrary. First of all, the Sahel is a region characterised by high climate variability, including cycles of increasing and decreasing rainfall, which were particularly severe in the 1970s and '80s. For some researchers, this environment serves as an analogy for future climate change in Africa, where the IPCC predicts increased water stress and compromising of agricultural production as a result of future climate variability and changes (IPCC 2007). Secondly, West Africa in particular has very high levels of human mobility. In the case of nomadic pastoralists, such as the Fulbe, mobility is a century old coping strategy for dealing with the vagaries of the Sahelian climate.

Despite these highly relevant circumstances in the Sahel, this skewed regional focus is somewhat out of proportion. Many other parts of Africa have experienced significant environmental changes; and climate change is going to be felt in several parts of Africa⁶. Moreover, migration is not a phenomenon that is particular to the Sahel, various migration patterns criss-cross the entire continent (de Haas 2007). Finally, other environmental factors besides drought deserve closer attention, to enable us to generalise findings about the role of environmental factors in migration dynamics.

In contrast to the similarity in the case studies' regional and environmental focus, the methodologies and types of analyses they apply are wide-ranging. Some studies use a combination of methods, whereas others are more strictly guided by one particular approach. Some authors are mainly concerned with the contextual details of a specific case, others more with the generalisation of their study.

The review does not include papers that consider how migration impacts on the environment⁷ (eg. de Haas 1998; de Haas 2001). Such studies are important, because they show that the relationship between environmental and broader social processes is dynamic and reciprocal; and that migration can act as a feedback effect that changes the environmental conditions in the migrants' place of departure (cf. Hugo 1996). For

⁶ According to a recent "climate change hit-list" released by the World Bank, several non-Saharan African countries are listed amongst the places in the world with the highest estimated risk of being adversely affected by climate change, including countries further south (Mozambique, Zimbabwe, Malawi, Kenya, Rwanda) as well as some north African (Libya, Tunisia). See online article by IRIN news: <http://www.irinnews.org/report.aspx?Reportid=85179>

⁷ For an overview of the impacts of migration on destination environments, see Hugo, G. (2008). Migration, Development and Environment. *IOM Migration Research Series*. IOM, IOM. 35.

example, out-migration from environmentally degraded areas may contribute to environmental recovery (Olsson, Eklundh et al. 2005). How such recovery influences migration patterns is left out of the current mainstream debate on the environmental change-migration nexus, and researchers often start from the assumption that the kind of environmental change important for migration is *negative* change, such as land degradation, decreasing precipitation and drought. The reciprocity and evolution of environmental and migratory processes is beyond the scope of this paper, but nonetheless important areas of research that deserve more attention.

The purpose of this review is mainly to see how the environment can be integrated into our conceptions of what drives migration. Yet, this does not imply proving whether or not there is a direct causal link between environmental and migratory processes, because it is not assumed that such a “stimulus-response” relationship exists. Such a line of enquiry would overlook the complexity of the causes of migration. It would also narrow the scope of this field of research, as it would merely be a question of verifying or falsifying a hypothesis about a causal relationship. Rather, what is interesting here, which Etienne Piguet (2009) has recently suggested, is to consider the *weight* of environmental factors in migration. To examine this, I distinguish the case studies into two main categories, on the basis of the following scheme:

Conceptualising the Relationship between Environmental Change and Migration

1. Push factors:

Environmental change → Migration (and/or other demographic responses)

2. Multi-level Contextual drivers:

Environmental change + Predisposing & Intermediating Social Factors → Migration

Conventional push-pull theories have tended to dominate the debate on the environmental change-migration nexus. Typically, environmental change in poor countries has been linked to population pressure on resources and unsustainable exploitation of the land beyond its carrying capacity, with resulting impoverishment and consequently, migration. These models draw on neo-Malthusianism, as migration is seen to result from population growth exceeding environmental limits. More recently, the typical argument is that extreme climate variability and potentially, climate change, is threatening poor people’s lives and depriving them of their livelihood means and hence, forcing them to migrate to more stable environments, possibly in the global North. The problem with this push-pull argument and the neo-Malthusian approach is that it assumes that the societies where migrants originate have no external influences or income sources, but are self-governing and completely agrarian; it also assumes that these societies are technologically constant, unable to circumvent or adapt to environmental constraints. Moreover, it disregards the fact that environmental change is only one of the factors determining whether or not people migrate; and it ignores that migration is just *one* of the possible responses to environmental change.

Newer migration theories and studies can help to improve our analysis of the relationship between environmental change and migration. Firstly, one strand of

migration theory builds on the observations that migration and development are reciprocally related and that the character of migration is dynamic and changing. Push-pull models tend to see migration as a linear response to particular economic and environmental conditions, without showing how migration impacts on the development of places and how this in turn, shapes migration dynamics. In contrast, migration transition theory postulates that in developing countries, migration tends to be positively related with development and increases exponentially until a certain level of welfare is reached, and rates of migration level off. Secondly, environmental change does not affect all people in a similar manner, and people do not respond to change in a unified, singular manner. Broader migration studies account for the diversity and internal stratifications of the societies where migrants originate, and studies focusing on social capital and network migration help explain why some people in a country or region migrate while others do not (cf. de Haas 2008).

Approaches to research on the environment-migration nexus have often been classified as either minimalist or maximalist, a distinction made by Astri Suhrke in 1994. According to Suhrke, the maximalist view posits environmental degradation as a direct cause of large-scale displacement of people. In contrast, in the minimalist view, environmental change is a contextual variable that can contribute to migration, but analytical difficulties and empirical shortcomings make it hazardous to draw firm conclusions (Suhrke 1994: 474). In the literature, maximalism is often used to denote studies that predict and quantify the flows of future ‘climate migrants’. Minimalism is used to refer to studies that highlight the complexity of causality and draw attention to the intervening social factors that contribute to migration.

In the late 1990s, as the debate on the environment-migration nexus became more entrenched, the dichotomy of approaches became more and more rigid, with studies being classified as either alarmist or sceptic. Alarmists estimated the number of current and future “environmental refugees”⁸ to be several millions, and considered environmental displacement as a worrying potential cause of conflict and environmental degradation in receiving areas. Sceptics on the other hand, considered the term ‘environmental refugee’ as non-sensical, criticised the lack of empirical basis of alarmism, and refuted claims of any direct causal links between environmental change and migration (Morrissey 2009). In academia, this schism was epitomised in the works of Norman Myers versus Richard Black (Myers 1993; Myers 1995; Myers 1997; Black 1998; Black 2001; Myers 2001). Myers forecast future flows and hotspots of climate migration, which he claimed were fast-growing. His various studies estimate the current numbers of “environmental refugees” at 25 million, with figures rising up to 200 million by 2050. In his report with Jennifer Kent (Myers 1995) he argued that developed countries needed to pre-empt the problems of unsustainable (environmental) development in poor countries, in order to avoid having to “import growing numbers of environmental refugees”. Myers has later argued that, “already there are sizeable numbers of environmental refugees who have made their way, usually illegally, into OSCE⁹ countries – and today's stream will

⁸ For an excellent review of the origins and development of the “environmental refugee” construct, documenting its origins in the neo-Malthusian literature, see Saunders, P. L. (2000). *Environmental refugees - The origins of a construct*. *Political Ecology: Science, Myth and Power*. P. Stott and S. Sullivan. London, Arnold.

⁹ It might seem peculiar that Myers refers specifically to OSCE countries, rather than the broader category of OECD countries, which are all high-income developed countries. This is possibly due to the fact that the text where the quote appears was prepared for the 13th Economic Forum of the OSCE, and the author is addressing his audience when referring to OSCE countries.

surely come to be regarded as a trickle when compared with the floods that will ensue in decades ahead” (Myers 2005: 4-5). Such alarmist and ‘environmental refugees’ discourses play into and potentially reinforce xenophobic fears.

Black in turn, questioned whether environmental refugees were a significant group of migrants deserving the world’s attention and argued that the conceptualisation of environmental degradation as the primary cause of forced displacement is unhelpful and intellectually unsound. His paper entitled, “Environmental Refugees: Myth or Reality?” (Black 2001) is often considered as one of the more radical attempts to fundamentally undermine the environmental refugee thesis (cf. Morrissey 2009). In the paper, Black cautioned that academic and policy writing on environmental refugees may have more to do with bureaucratic agendas of international organisations and academics than any real theoretical or empirical insight (Black 2001: 14). Many scholars have questioned the alarmist predictions, particularly the estimates of the numbers of environmental refugees, which do not appear to be based on any sound empirical evidence: “When it comes to predictions, figures are usually based on the number of people living in regions at risk, and not on the number of people actually expected to migrate. Estimates do not account for adaptation strategies, different levels of vulnerability to change, or simply – though it might sound harsh – disaster-related casualties” (Gemenne 2009:159).

While the distinction between minimalism and maximalism might be helpful for orientation in the broader debate on environmental change and migration, it is perhaps too crude for classifying most of the empirical case studies conducted by academic researchers. Maximalism does not as such refer to a particular theory or framework of analysis, and can potentially be used to label whatever is considered “unscientific” or uninformed statements about the environment-migration nexus. In fact, none of the case studies reviewed for this paper are pure maximalist studies, because all the authors acknowledge, to varying extends, the multiple causalities of migration. Also, the association of maximalism with alarmism and minimalism with scepticism can be misleading. For example, as we will see in the review, Meze-Hausken’s (2000) study does address the complexity of causality, and therefore appears to fit the label of minimalism; however, the author is not particularly sceptical about the notion of ‘climate migrants’, which she uses almost uncritically. Minimalists on the other hand, are according to Suhrke (1994) primarily migration experts, who emphasise complexity and multi-causality, but do not produce new insights that can be generalised. However, while the reviewed case studies sometimes reveal the authors’ lack of migration expertise, most of them do acknowledge multi-causality of migration while *also* producing insights that can potentially be generalised.

The present paper tries to move beyond the maximalism/minimalism binary and instead, categorises and discusses case studies on the basis of how they fit into current debates and theories in migration studies. The two conceptual approaches identified in the above scheme (Push factors and Multi-level Contextual drivers) are less normative or clear-cut ideal types than the minimalist/maximalist distinction. Nonetheless, this paper still insists that it is useful to distinguish between two categories of case studies, to illustrate how conceptual frameworks shape the kinds of data and analyses researchers produce. Besides guiding good academic research, theoretical frameworks can also be important guides to action, and a good theory helps to develop well-targeted policies (de Sherbinin, Carr et al. 2007).

The first types of studies, identified here as the Push factor type, are the ones that look at the environmental changes that determine migration. These studies tend to set out with hypotheses to establish the correlation between environmental change and migration, rather than questioning whether such a direct link exists or can be proven. These studies emphasise macro-level push factors of migration, such as the climate, demographics and income, and mainly apply quantitative methods. Neo-Malthusianism and a push-pull framework of migration tend to underlie these studies. This category also includes studies which are less concerned with causality between environment and migration but rather, look at the range of demographic responses to environmental change, of which migration might be one.

The second types of studies, on Multi-level contextual drivers, consider a more complex, dynamic relationship between environmental change and migration, and consider not only macro-level factors, but also the meso- and micro-levels of analysis. The studies thus account for the complex interplay of structural and agency factors in migration dynamics. Authors consider various responses to environmental change, including resilience, adaptation and survival strategies of the people affected. Such strategies may include reduced consumption, diversification of livelihoods, and technological adaptations and innovations (none of the reviewed papers deal with this particular aspect, though), and may involve migration, either on a short term, cyclical, or long term. The authors analyse environmental factors of migration by placing them in their historical, economic, political and/or cultural context. Newer migration theories, including New Economics of Labour Migration (NELM) and livelihoods and household approaches inform many of these studies. Moreover, environmental change is generally considered in relationship with wider social and structural changes. Some of the studies are informed by social constructionism and political ecology, and conceive of the causes of migration as socially constructed or socially mediated rather than “natural”. The authors generally do not agree with the idea of a direct or mono-causality between environmental change and migration. Rather than reducing the drivers of migration to external structural forces, like weather patterns and climate change, they try to discover the predisposing or intermediating social factors in contexts of simultaneous environmental change and migration, to understand how and why people move.

Overview of reviewed papers

The 13 case studies considered here cover different countries in the Sahel, spanning from the east to the west. The countries considered in the studies are: Burkina Faso (Henry, Boyle et al. 2003; Henry, PichAco et al. 2004; Henry, Schoumaker et al. 2004)¹⁰, Ethiopia (Meze-Hausken 2000; Ezra and Kiros 2001), Ghana (Carr 2005; van der Geest 2009), Mali (Findley 1994; Pedersen 1995; de Bruijn and van Dijk 2003), Niger (Faulkingham and Thorbahn 1975; Mounkaila 2002; Afifi 2009), and Senegal (Bleibaum 2009). Finally, one paper (Bassett and Turner 2007) considers a larger area of West Africa, the so-called Sudano-Guinean region¹¹.

¹⁰ Note that the three papers co-authored by Henry have corresponding findings and appear to emanate from the same research project, and therefore they are here considered as one case study.

¹¹ Sudan here refers to a geographic region south of the Sahel, stretching from west to east Africa, from Mali in the west to the Ethiopian Highlands in the east. The Guinean region is in the south-western Sudan region, located along the Gulf of Guinea.

The case studies by Van der Geest, Bleibaum and Afifi were all carried out as part of the EACH-FOR (Environmental Change and Forced Migration Scenarios) project funded by the European Commission. These case studies aimed to investigate the correlation between environmental degradation and migration patterns (see <http://www.each-for.eu/index.php?module=main>).

Reviewed case studies that fit the Push factor framework of analysis include:

- Afifi, T. (2009). Niger Case Study Report. EACH-FOR Environmental Change and Forced Migration Scenarios.
- Bleibaum, F. (2009). Senegal Case Study Report. EACH-FOR Environmental Change and Forced Migration Scenarios.
- Faulkingham, R. and P. F. Thorbahn (1975). "Population Dynamics and Drought: A Village in Niger." Population Studies 29(3): 463-477.
- Henry, S., P. Boyle, et al. (2003). "Modelling inter-provincial migration in Burkina Faso, West Africa: the role of socio-demographic and environmental factors." Applied Geography 23(2-3): 115-136.
- Henry, S., V. PichAco, et al. (2004). "Descriptive Analysis of the Individual Migratory Pathways According to Environmental Typologies." Population and Environment 25(5): 397-422.
- Henry, S., B. Schoumaker, et al. (2004). "The Impact of Rainfall on the First Out-Migration: A Multi-level Event-History Analysis in Burkina Faso." Population and Environment 25(5): 423.
- Meze-Hausken, E. (2000). "Migration caused by climate change: how vulnerable are people in dryland areas? A case study in Northern Ethiopia." Mitigation and Adaptation Strategies for Global Change 5(4): 379-406.
- Pedersen, J. (1995). "Drought, Migration and Population Growth in the Sahel: The Case of the Malian Gourma: 1900-1991." Population Studies 49(1): 111-126.
- Van der Geest, K. (2009). Migration and natural resources scarcity in Ghana. EACH-FOR Environmental Change and Forced Migration Scenarios.

Reviewed studies that emphasise Multi-level Contextual drivers include:

- Bassett, T. J. and M. D. Turner (2007). "Sudden Shift or Migratory Drift? Fulbe Herd Movements to the Sudano-Guinean Region of West Africa." Human Ecology 35(1): 33-49.
- Carr, E. R. (2005). "Placing the environment in migration: environment, economy, and power in Ghana's Central Region." Environment and Planning A 37(5): 925-946.
- De Bruijn, M. and D. van Dijk (2003). "Changing Population Mobility in West Africa: Fulbe pastoralists in central and south Mali." African Affairs 102(407).
- Ezra, M. and G.-E. Kiros (2001). "Rural Out-Migration in the Drought Prone Areas of Ethiopia: A Multilevel Analysis." International Migration Review 35(3): 749-771.
- Findley, S. E. (1994). "Does Drought Increase Migration? A Study of Migration from Rural Mali during the 1983-1985 Drought." International Migration Review 28: 539-553.

- Mounkaila, H. (2002). "De la migration circulaire à l'abandon du territoire local dans le Zarmaganda (Niger) " REMI (Revue Européenne des Migrations Internationales) 18(2).

Discussion

This part of the paper will discuss some of the key issues emerging from a review of case studies on the environmental factors in migration dynamics in the Sahel. First, the central findings in the reviewed papers will be summarised. This will be followed by a discussion of some significant methodological, definitional and conceptual issues identified in the reviewed case studies. Finally, the paper will conclude with some recommendations for future research.

Central Findings

From the review of case studies on environment and migration in the Sahel, it appears that environmental stressors such as drought do not necessarily lead to migration. This is usually because migration - particularly long-distance and international migration - requires resources and during drought, resources are scarce. This was confirmed by studies in Ghana and Burkina Faso, where severe droughts limited people's ability to invest in migrations (Henry, PichAco et al. 2004; van der Geest 2009); and in Mali, where migration during drought was limited to short-distance rather than international destinations (Findley 1994). Moreover, migration requires social networks outside that the migrant can draw upon for support, and if a community has no previous history or tradition of migration, such facilitating networks will not be present to help people migrate during drought (Faulkingham and Thorbahn 1975; Bassett and Turner 2007).

Another common conclusion is that migration during drought tends to be within the borders of the migrants' country of residence. Only one of the reviewed papers specifically examines the process of international migration in the context of environmental change, namely Basset & Turner's (2007) study of Fulbe herders in the Sudano-Guinean region, who were crossing the borders of neighbouring countries. Findley (1994) points out that it would be wrong to assume that drought-related migrants cross international borders. As mentioned, this is largely related to a lack of resources. Bleibaum (2009) shows that in two villages in the Peanut Basin, the more resourceful village had people emigrated to larger cities or Europe and for longer time, while the poorer village had seasonal migration to the cities. Moreover, as Findley (1994) argues it cannot be assumed that drought-related migrants permanently leave their homes. Drought-related migrants may want to return once conditions improve, and it therefore makes sense if they only move a relatively short distance.

Thirdly, when migration occurs during drought, there are other non-environmentally related factors that interact with drought to lead to migration. These other factors tend to be context-specific. For example, Ezra & Kiros (2001) observed that vulnerability of the studied community to food crisis had significant positive effect on out-migration, especially to assist relatives. Meze-Hausken's (2000) study on the contrary showed that there was no correlation between vulnerability and the time elapsed until migration, as the most vulnerable left after a similar number of months as the least vulnerable.

While all the reviewed studies conclude that causality of migration is complex, there is dispute about the nature of this complexity. The studies taking a macro-level approach tend to isolate the climate or environment from the historical, social and political context and, although they recognise the importance of other factors, they consider these climate/environmental factors as the major drivers of migration. The studies that focus on multi-level contextual drivers tend to argue that the environment cannot be isolated from other causes, and the reason why environmental change may be associated with migration is because it relates to or coincides with other structural changes. Hence, processes and dynamics involving the environment, politics, economy and culture are intertwined and inseparable and it is this complexity that explains migration. For these authors, environmental change *per se* can never directly cause migration.

The assumption that drought ‘causes’ people to flee suddenly is challenged by several of the case studies. Population movements in the Sahel under conditions of environmental change appear to be progressive rather than sudden. In their study of Fulbe herders, Basset & Turner (2007) showed that a progressive southerly drift of herders had mistakenly been assumed by researchers to be a sudden flight during drought. Mounkaila (2002) writes about Niger that permanent abandonment of the rural territory is an exceptional form of migration, and a strategy of last recourse. However, he adds, if the food deficit becomes chronic, as the trend over the last decades is indicating, it is likely that migration will progressively result in complete abandonment of this area. Yet, it is worth noting that in Mounkaila’s case study it is food deficit, not environmental change *per se*, that would result in migration. The observation that most migration under conditions of environmental change in the Sahel are gradual processes makes it difficult to establish whether such movements should be considered as forced displacements, or more like normal voluntary migration. Moreover, migration in the context of drought challenges normative and political perceptions of migration, which tends to be viewed as a problem; in the case studies, permanent abandonment of an environmentally degraded area is rather a solution, and immobility would indeed be a major constraint, in some cases certainly resulting in continuing degradation and death from starvation.

Many of the case studies show that the choice of destination for drought-related migrants is not random but depends on various conditions at the destination. One factor is the presence of social networks and a sense of familiarity in terms of cultural practices, language, and religion. This probably explained Van der Geest’s (2009) observation that, while two regions in Ghana had equally high environmental pressure, one of them had higher emigration rates. The migration tradition and networks of the people studied by Mounkaila (2002) is also a likely reason why those who were vulnerable to food crises were able leave. Environmental conditions at the destination can also be important. In Burkina Faso, Henry et al (2004) found that migrants choose proportionally more often areas with favourable environmental conditions than areas with unfavourable environmental conditions for their destination. Political-economic factors also play an important role: In Ghana, drought in the 1970s and ‘80s coincided with economic crisis, political instability and high food prices in southern Ghana, which probably made people in the north averse to migrating to this destination (van der Geest 2009). Basset & Turner (2007) found that pro-pastoralist policies in Cameroon and Cote d’Ivoire attracted Fulbe pastoralists.

They also showed that showed how mobility patterns were linked to contingent factors such as cattle disease, drought, political instability, as well as the establishment of social networks, herding contracts and cattle cross-breeding.

A community of people affected by the same environmental changes does not necessarily react to such change as one homogenous group. Hence, it is not necessarily the entire affected community that leaves during drought, and structural conditions such as marriage practices and gender inequality may be decisive in who gets to move and who stays behind. In Mali, Findley (1994) noted that during drought we can expect an increase in the short distance migration of women and children. Meanwhile, Afifi's (2009) study in Niger showed that women were usually left behind by their emigrated husbands. In the case of Ghana presented by Carr (2005), younger men would emigrate relatively quickly, while older men would stay put for as long as possible in an attempt to maintain their positions of local and household authorities. Related to this is the observation that environmental change may be associated with not just one but a variety of migratory patterns. As De Bruijn and Van Dijk (2003) showed, some of the Fulbe who moved south settled outside established villages, others were continuously moving between various villages, and yet others established their own settlements.

The papers also show that we need to take adaptation and non-migratory responses to environmental change into account. It is worth noting that life in the Sahel generally tends to be under difficult conditions at the margin of subsistence. For example, Mounkaila (2002) writes that food insecurity is a constant factor in the economic history of his study area in Niger. Under such circumstances, people have developed many adaptation mechanisms and people might adapt to environmental and climate change through other mechanisms than migration (cf. Meze-Hausken 2000). This point is borne out in the papers on various responses to environmental change. Mounkaila's (2002) paper on Niger explicates the numerous non-migratory strategies that a community employs to cope with food insecurity, including reduction of food consumption; humanitarian food aid; mutual support; eating wild crops; and recurring to secondary commercial activities. Faulkingham & Thorbahn's (1975) study in Niger showed that migration was not a useful response to drought; instead, the communities kept the demand on food down through endogamous and patrilineal marriages practices, which limited population increase from immigration. Pedersen's (1995) case study from Mali is an example of resilience, where the impacts of drought are absorbed by a community, rather than leading to social collapse. He questions a Malthusian interpretation of drought in the Sahel, whereby the severe droughts of 1972-73 and 1984 triggered a collapse (also referred to as Malthusian crisis), which was fundamentally caused by an imbalance between population and resources (ie. population pressure). Pedersen argues that the population had *not* grown beyond its resource base and that the droughts were unrelated to population pressure. His results show that the population is growing, and has done so throughout the twentieth century, and the recurrent droughts do not seem to have had a devastating effect on the population and the population does not appear to show a pattern of growth and collapse, as predicted by the Malthusian perspective.

Many of the studies point out that migration is not merely or necessarily a response to crisis or change, such as drought. Often, particularly in the Sahel, migration is a *normal* part of an individual's life-course and part of a household strategy for

economic improvement, to diversify income, release pressure on resources, and spread risk (cf. Ezra and Kiros 2001; Mounkaila 2002; Bleibaum 2009; van der Geest 2009). Mounkaila (2002) for example writes about Niger that migration persists even when agriculture is sufficient to cover villagers' food requirements. De Bruijn and Van Dijk (2003) write that for the Fulbe, mobility has always been part of the cultural repertoire for responding to varying and often insecure and risky environmental conditions and this prerogative has become part of their self-definition as a wandering people. In fact, it could be argued that climate change in the Sahel is problematic because it *undermines* migratory livelihoods and patterns of migration (cf. Morrissey 2009). For examples, nomadic pastoralists are forced to move their herds further south away from their usual pastures (cf. de Bruijn and van Dijk 2003; Bassett and Turner 2007); or people relying on long-distance migration, for example from Mali to France, may be forced to reduce the distances of their movements under conditions of scarcity, such as drought (cf. Findley 1994). The problem is therefore not migration *per se* but rather, the undermining of the migratory systems and structures that secure livelihoods in the Sahel.

Finally, what counts as an environmental problem is relative. As Meze-Hausken writes, an Irish farmer would probably consider a month without rainfall as a drought; whereas people in Ethiopia might have quite different views about such weather phenomena (Meze-Hausken 2000: 389). *Perceptions* of environmental change, and not merely change *per se*, might be an important factor explaining migration decisions. An illustrative case is the study by Carr (2005) on migration in Ghana. While residents claimed that environmental changes, such as declining rainfall and land degradation, were taking place, the author comments that such claims cannot be scientifically proven. Considering this lack of scientific evidence of environmental changes, Carr might have considered analysing villagers' *perceptions* of their local environment: he explains that the demise of logging and ensuing unemployment deprived villagers of sources of income they had come to rely upon as part of their household income; perhaps then, high levels of consumption during decades of prosperity in the village meant that, after the demise of logging, villagers' expectations from local crop production to meet their high demands did not match the capacities of the local environment. A final example of the importance of considering subjective understandings of environmental change can be drawn from Bleibaum's (2009) study. Bleibaum writes that in the Senegal River Valley, where access to land and irrigation is difficult for local residents, many households depend on migration; yet, the region also has *in-migration* of people who come to work there in irrigated agriculture. Clearly then, local residents' and in-migrants' perceptions and experiences of the environment in the Senegal River Valley diverge.

Methodological issues

While an overview of the central findings of the reviewed studies is helpful for conceptualising the interactions between environmental change and migration, it is important to consider whether those findings are indeed valid and reliable. Critically, the case studies reviewed here contain several methodological flaws, which limit the authors' ability to collect appropriate empirical data, to develop valid arguments on the basis of their data, to generalise their findings, and to make any valid contribution to theory. The studies on macro-level push-factors are particularly problematic, but other more critical case studies have various flaws, too.

For example, researchers often confound anthropogenic climate change and natural climate variability, and frequently ignore the social constructedness – the ‘political ecology’ - of environmental changes, such as land degradation and drought. This problematic will be dealt with in the subsequent section on definitions. Moreover, samples of informants are sometimes biased and not always representative. Causality is sometimes established on the basis of insufficient data, or explanations are based on assumptions which are not empirically tested. At worst, authors ignore their informants’ statements, or make sweeping generalisations with limited empirical evidence, such as the following: “Generally, when people migrate, they do not have anything and therefore they do not have any other choice than to move. Therefore, it is forced migration for environmental reasons” (Afifi 2009:23). Furthermore, several studies aimed at examining the drivers of migration contain no explicit references to migration theory, beyond the problematic push-pull framework. Leaving aside these more general problems, the rest of this section will focus on a few particular methodological concerns that are central to the debate on environmental change and migration.

A central methodological concern in this debate relates to time, particularly in terms of predictability and projection of current and historical events into future scenarios. In her study of Ethiopia, Meze-Hausken (2000) hypothesises that experience from past drought behaviour during the last decades can serve as an analogy for impacts under future climate change. She argues that historical analogy is a more convincing method than computer generated scenarios, because the historical data constitutes ‘real events’. However, she never actually tests this hypothesis, but bases her analysis on the assumption that historical events can indeed be useful for predicting the future. Meze-Hausken (ibid) does point out that human reactions to recurrent events are non-linear – over time, similar events may provoke entirely different responses. However, she does not go further into the debate as to whether we can expect history to repeat itself or indeed, whether future migration in the context of climate change can at all be predicted¹². Meanwhile, future climate changes are predicted to be of an unprecedented scale – the changes will be much more dramatic and severe than anything experienced in the past – and this may render any historical analogy impossible. Another problem with establishing projections is that relative to the individual human being’s short life-span, local environmental conditions change very slowly, for the better or the worse. Also, if a deterioration of the local area develops over 100 years, one can expect a higher degree of adaptation than in the case of for example, a volcanic eruption, or a locust attack. Furthermore, making projections of environmental change over time is complicated by the fact that such development is partly caused by various “tipping points” being reached, which accelerates the development, before it is even possible to make any exact estimates of when the tipping points occur¹³.

If we leave aside the problem of establishing projections of environmental change and migration, one approach that may help us grasp the significance of time on the environment-migration nexus is longitudinal studies. The importance of this method

¹² For example, a study from the Danish Institute for International Studies (DIIS) has shown that in the past, conflicts over water access have always been resolved peacefully. Meanwhile, Oli Brown from the International Institute for Strategic Developments (IISD) has recently argued that, in the future, water will become a central issue in a struggle over access to limited resources in parts of the Middle East. These diverging findings seem to suggest that past events cannot easily serve as analogies for future impacts of climate changes.

¹³ I would like to thank Peter O. Jonsson for pointing out these issues.

is illustrated in the study by Basset & Turner (2007) on Fulbe herders in the Sudano-Guinean region. Their study showed that snap-shots of migration in contexts of environmental change may distort the picture, and migratory drifts be mistaken for sudden displacements. Henry et al (2004) lament that in the empirical literature on the environment-migration nexus, often only one drought event is studied, therefore missing the cumulative aspect of the influence of environmental conditions on migration. It should be added that the reverse is also true: the cumulative aspect of migration also tends to be ignored, and researchers often disregard the fact that people may already be engaged in migration as part of their livelihoods, before the onset of environmental change. The dialectic between migration and structural change - including environmental change - needs to be explored more in-depth. While a long-term perspective on migration is useful for understanding this dialectic, studies that are limited to environmental variables miss out important contributing social factors.

Another methodological concern relates to the reliability and validity of the data that is presented in the case studies. At times, authors use methods that are less rigorous and robust, which limits the value of their data. For example, Afifi (2009) only spent three weeks in the field and appears to mainly have interviewed experts, yet he produces very generalising statements about why people from Niger migrate. Some authors draw on statements by respondents in a manner that is not sufficiently critical or reflexive. Ezra & Kiros' analysis (2001) includes data from a survey asking people why they migrated and giving them limited options to choose their response. Van der Geest (2009) acknowledges that, "the underlying causes of migration and underdevelopment will not be mentioned by respondents who are asked about their personal motivation to migrate" (van der Geest 2009:3). Nonetheless, he still uses such data to establish whether north-south migration in Ghana was environmentally induced, and to what extent migrants were forced to migrate. Henry et al (2004:399) stress that survey results should be taken with caution because of inherent biases in the replies to a question on the motives of migration (eg. gendered responses where men say they migrate to earn more money or because crop yields are low, and women that they migrate for family reasons). People's discourses explaining migration are often reproductions of official discourse; that is, they use standardised narratives rather than analytical explanations of their own experience. Moreover, researchers cannot expect respondents to analyse their own behaviour and therefore, data from a survey that asked a migrant or his relatives why he migrated can be problematic.

However, the complexity of obtaining and analysing qualitative data should not be used as a justification for ignoring such data. Qualitative data deals with meaning and is useful for illustrating people's perceptions and experiences. Such data can be obtained by using a bundle of methods, which ensure that the data is reliable and representative. This could include triangulating informants' statements, conducting follow-up interviews, conducting participant observation, and spending enough time in the field to be able to judge whether the data is reliable and representative. Substantial qualitative research is under-represented in the reviewed case studies, and there is therefore a lack of qualified analyses of people's perceptions and subjective experiences. Many of the case studies therefore ignore the agency of the people whose experiences and behaviour they are studying. This is problematic, because studies that merely consider structural factors cannot explain how people make sense of these structures and how they navigate or resist the structures.

Finally, a central methodological challenge for researchers is the highly interdisciplinary requirements of this field, which demands data on both social and natural processes. Social scientists may be capable of analysing the economic, political, historical and cultural dimensions of migration, but are not necessarily equipped with skills to assess whether and how the natural environment is changing, not to mention assess the influence of climate change on a particular local environment. For this, they will have to rely on data and reports produced by scientists, such as physical geographers and climate change experts, without necessarily being able to scrutinise or question the methodologies behind such studies. On the other hand, while natural scientists may be in a better position to establish 'hot spots' for climate change and the potential local environmental implications of this, such insight is not sufficient for determining whether the people affected will migrate or not.

Defining the Environment and Migration

In order to generalise research findings and develop theory about environmental factors in migration dynamics, there is a need to establish some clarity and agreement about the terms of the debate and the objects of study. However, definitions are a central point of confusion in this field.

First of all, there is a frequent confusion between terms such as climatic conditions versus climatic events, or climate change versus climate variability. Bleibaum (2009) argues that environmental degradation in Senegal is caused by both climate variability and human actions. She does not explain how climate variability has degraded the environment and confounds (natural) climate variability with (anthropogenic or natural) climate change. Climate variability per se cannot cause environmental degradation, but it may exacerbate already existing processes, such as land degradation (cf. Blaikie and Brookfield 1991). In contrast, climate change entails unprecedented changes, which may well contribute to environmental degradation, because ecosystems are not geared to such conditions. This complexity is not addressed by Bleibaum, who uses the two terms interchangeably. Henry et al (2004) found that more people migrated out of rural areas affected by land degradation than areas affected by poor climatic conditions. They therefore argue that it can be assumed that "migrations are likely to be more influenced by a slow-acting process such as land degradation than by episodic events such as droughts". This conclusion is confusing because the authors use the term 'climatic conditions' as interchangeable with 'episodic events', like drought. Climatic conditions are not episodic but instead, long-term patterns; in contrast, a climate *event* would be something recurrent in that pattern, like the monsoon or El Nino or indeed, drought. While, as the authors claim, drought may not influence migration, certainly the long-standing migration patterns in the Sahel are related to the difficult (but not necessarily declining) *climatic* conditions in the region as well as the need to diversify income-earning opportunities (Black 1998: 28). The lack of clarity in defining the terms of analysis obscures our understanding of the nature of the relationship between environmental change and migration.

A common bias in the debate on environmental change and migration is the expectation that people generally live under stable climatic conditions; hence, arguments and research are often guided by the assumption that a stable, predictable and conducive environment is the (historical) norm and that environmental change

and extreme climatic variability is exceptional and disruptive. Yet, to some people, environmental change, stress and degradation is not necessarily experienced as a deviation from the norm, but as a constant factor in life. This is particularly the case in the Sahel, where change and crisis tend to be regular features. Several of the authors even refer to what is called '*la condition sahelienne*' to denote this peculiar normativity, whereby change and disruption, including unstable climatic circumstances, irregular rainfall patterns and periods of drought, are often described as pervasive factors in the Sahel (de Bruijn and van Dijk 2003). In their study of Niger, Faulkingham and Thorbahn (1975: 476) write that drought is a recurrent phenomenon and societies have adapted culturally to respond to the resulting high mortality, by being "pro-natalist". In another study of Niger, Mounkaila (2002) describes food insecurity as a *constant* fact in the economic history of that area. Finally, Meze-Hausken (2000:386) writes that: "So-called 'normal' rainfall in the semiarid tropics is perhaps fictional. For subsistence farmers with rain-fed agriculture variability is the current norm". De Bruijn and Van Dijk (2003) argue that in the context of *la condition sahelienne*, mobility plays a central role in livelihood strategies. Their study is based on fieldwork over a period of fifteen years, and focuses on the processes underlying the rural-rural migrations from north to south of Mali, which has been occurring since the 1960s. The authors argue that, for the Fulbe, mobility has always been part of the cultural repertoire for responding to varying and often insecure and risky environmental conditions and this prerogative has become part of their self-definition as a wandering people.

Another implicit bias is that (environmental) change is necessarily negative: most of the case studies on the link between environmental change and migration build on an assumption that migration is related to environmental *stress*, such as drought and land degradation. However, the relationship between *improvements* in environmental conditions and migration is just as relevant for understanding the nexus. It is worth noting that recent research findings suggest a consistent trend of increasing vegetation greenness in much of the Sahel and that increasing rainfall over the last few years is one reason, but other factors, such as land use change and migration, may also contribute (Olsson, Eklundh et al. 2005).

As mentioned in the introduction to this paper, the debate on environmental change and migration is often driven by concerns over climate change. Yet, not all climatic changes are threatening lives or livelihoods, and there are also movements related to environmental factors that are entirely unrelated to climate change (Kniveton, Schmidt-Verkerk et al. 2008). For example, the great Indian Ocean tsunami in 2004 caused mass displacements, but was entirely unrelated to climate change. Moreover, droughts, for example as witnessed in the Sahel, are not necessarily related to climate change, but may be part of a long term climate pattern which includes episodes of very low rainfall (Black 2001). The confusion over the types of environmental changes is a major difficulty in understanding the driving forces behind the environment-migration nexus (Gemenne 2009:161). It is not at all clear exactly which environmental factors qualify to be addressed under this debate. Should research only focus on climate change, or also, the weather, natural disasters, and socially engineered development projects? Where do we draw the line? And who draws it, policy-makers or researchers? Defining an environmental problem is also a matter of politics and power. Authorities may have a different opinion than migrants about what

constitutes an environmental problem; just as policy-makers make have a different interest in examining the environment-migration nexus than academic researchers.

In the case studies, it is often unclear what is meant by the concept of ‘the environment’ and how to distinguish the environment from the political economy. For Van der Geest (2009), resource scarcity is an environmental problem and, in his case study, an “environmental cause” of migration. Conversely, Ezra and Kiros (2001:758) consider drought as an economic problem and, in their case study, an economic reason for migration. Understandings of ‘environmental change’ also vary. Some authors seem to believe that the causes of environmental change are natural (climate variability is the typical example in the reviewed studies), while others acknowledge the dynamic interplay of ecological, political, economic and other social causes of environmental change. These analytical discrepancies are related to different and contrasting conceptualisations of human-nature relationships.

It is helpful to clarify the different academic traditions that conceptualise the relationship between humans and nature and in particular, different theories of carrying capacity. Black (1998) distinguishes between neo-Malthusian, technological, and institutional or political approaches to carrying capacity. A neo-Malthusian approach considers the relationship between people and resources to be related in a deterministic manner with the independent variable being population pressure, i.e. the demand of a growing population on a finite amount of natural resources. Humans are therefore seen as standing outside the environment, posing as consumers or degraders of the environment, particularly when their numbers rise with increasing fertility rates and/or immigration. In contrast, a technological approach argues that carrying capacity is constantly changing as technological advances increase the productivity of natural and other resources. This is related to Esther Boserup’s (1965) argument that population pressure provides social and economic imperatives to innovate and develop new technologies. Finally, what Black (1998) refers to as the institutional or political approach to carrying capacity argues that the adequacy of resources to meet human needs is determined by the distribution of resources rather than the ratio between population and resources. This is related to Amartya Sen’s entitlement approach, which he applied to the causes of famine¹⁴, demonstrating that famine does not necessarily occur as a consequence of an absolute lack of food, but rather due to unequal food distribution (Ezra 2001).

The reviewed case studies generally fall into two camps – either they mainly rely on neo-Malthusian type of reasoning when considering environmental change, or conversely, they reflect a political ecology approach. Malthus’ principal hypothesis was that lack of equilibrium in the relationship between population and natural resources is followed by some kind of negative response from either side. Hence, crises including famine are responses resulting from a lack of balance between resources and population, so-called ‘population pressure’ (Ezra 2001). Neo-Malthusianism applies these notions to environmental sustainability, linking environmental degradation to population pressure. One of the key problems with neo-Malthusian theory is that it posits the environment as a finite source that sets absolute limits for human action and therefore, famine and starvation are “natural” and inevitable (Robbins 2004). This deterministic approach and particularly, the notion of

¹⁴ Cf. Sen, Amartya (1981): “Poverty and Famines: an Essay on Entitlement and Deprivation”.

population pressure on resources ignores the significance of socio-economic change and technological input, such as new crop introduction (Blaikie and Brookfield 1991). Karl Marx was one of the earliest critics of Malthusian theory, arguing that progress in science and technology would allow for indefinite exponential population growth. Even in extremely poor countries, out-migration and the receipt of food aid relax the constraints imposed by a country's carrying capacity (cf. Neumayer 2006). Moreover, as Blaikie and Brookfield (1991) argue, it should not be assumed that population pressure leads inevitably to land degradation: High population pressure provides abundant labour with which to do intensive management; and where land is abundant, the need to conserve it may not be apparent.

Yet, in spite of the substantial critique, much of the newer work on the environmental change and migration nexus is informed by neo-Malthusianism and “apolitical” ecology. For example, Meze-Hausken (2000) uses the term ‘climate migrants’ to denote migrants who moved during the droughts in Ethiopia in the 1970s and ‘80s, which coincided with civil war. This term reduces the complex causes of drought to purely climatic factors; it does not address the issue of entitlements identified by Sen, explaining why the droughts lead to famine, which in this case eventually led to migration. Meze-Hausken argues that migration is a “second order climate impact”, rooted in the processes directly affected by climate change and which determine food and livelihood security. But since food and livelihood security never simply depends on the climate, the notion of ‘climate migrants’ does not seem to make much sense. Meze-Hausken adds that, while not being the reason for migration, the coinciding civil war essentially influenced coping strategies: many people were disturbed in carrying out off-farm activities and trading, and food aid did not reach the villages due to political conflicts. This seems to suggest that what she terms climate migration could in fact be termed a ‘second order civil war impact’. Another example is Van der Geest’s (2008) analysis of interviews with migrants in Ghana, which reduces the causes of migration to environmental factors, downplaying the complexity of the matter. His interviewees mentioned land as the key factor causing their migrations, and most had left because farming conditions were better in the destination than at home. Yet, they made no reference to unreliable rainfall patterns, droughts or floods. The second most important reason for migrating was financial. However, the author claims that the cause of these factors, including poverty, hunger and food scarcity, is partly environmental, because prior to migrating, the respondents were farmers depending on the natural resource base for their livelihood. Hence, he concludes that the most mentioned causes of migration were “either directly or indirectly environmental”. Meanwhile, it seems just as valid to argue that the causes were either directly or indirectly *economic*, depending on how one distinguishes between environmental and economic factors. Also, the author assumes that the societies under study are productively and technologically constant and entirely agrarian, and therefore these people’s livelihoods depend entirely on the natural resource base. This is a common stereotype of rural African societies that has been refuted by numerous studies, including classical studies of colonialism and rural-urban labour migration¹⁵. Rural households in Africa and elsewhere tend to diversify the risks related to agriculture by relying on various other income sources, including various trades and income generated by migrants (Hampshire and Randall 1999; Ellis 2003).

¹⁵ The Manchester school of anthropology, founded by Max Gluckman, dealt particularly with these issues.

A contrasting approach that focuses explicitly on politics, the role of states, and human agency is political ecology (Bryant 1992). This is an interdisciplinary area which connects politics and economy to problems such as environmental change, thus questioning strict separations between society and environment, and paying particular attention to the social construction of the environment. The guiding objective of political ecology is understanding the complex relations between nature and society through analysing the forms of access and control over resources (Robbins 2004; Bloomer 2009). Political ecologists emphasise historical and structural factors as mediators in the relationship between population and environment. They question normative, conservationist assumptions of the population pressure debate, according to which change, including migration, is bad. Depending on the political economic context, 'environmental stress' can coincide with innovation and livelihood improvement or alternatively, with productivity decrease and impoverishment (Blaikie and Brookfield 1991). Informed by such understanding, researchers have argued that misguided developments in agricultural practices and policies was the main reason why drought turned into famine in the 1970s in the Sahel (Brooks 2006). Brooks (2006) explains that exceptional decades of high rainfall in the Sahel during the 1950s and '60s encouraged optimistic and recently de-colonised African nations to rapidly expand agriculture northward, into areas where pastoral nomads were traditionally herding their cattle. This pushed the herders into the Sahara, and they were further marginalised by policies, which restricted their access to pastures. This made them more vulnerable to drought, and when rainfall conditions in the Sahel returned to their "normal" low levels in the 1970s, these marginalised pastoralists were starving and forced to move south.

The political ecology approach often characterises the studies on Multi-level contextual drivers. De Bruijn and Van Dijk (2003) for example argue that the specific cultural responses and characteristics of the Fulbe nomads in the context of *la condition sahelienne* are not merely the functional consequences of environmental instability. Rather, they are the result of a historical development, in which environmental instability, economic fluctuations, and political and military turmoil provided the background against which people had to secure their existence. The authors claim that historically, the impetus for mobility patterns has changed: previously, the reasons were the agricultural seasons and political developments whereas presently, the Fulbe are fully exposed to the vagaries of the Sahelian climate and resulting economic fluctuations in the form of oscillating food prices. It is important to note that this does not necessarily mean that the climate is driving contemporary migration but rather, that the changing political economy has made the Fulbe more vulnerable to drought. As the authors stress, mobility and the vagaries of the climate are nothing new to the Sahel¹⁶. Carr's (2005) study is explicitly based on political ecology. Carr shifts the focus from conditions that drive migration toward the local power/knowledge in which environment, ecology and politics are understood. The ways migrants negotiate and transform their context and the objectives behind such negotiation and transformation are the condition and result of this understanding (ibid). Carr's study shows how the environment, economy and society are linked in migration decisions. He argues that the Ghanaian migrations show how environmental change becomes inseparable from local perceptions of economy and local politics through local manifestations of power. In this study, the environment always impacts

¹⁶ Confusingly, though, the authors mention briefly (p287) that, amongst various factors, climate change has given population mobility in the Sahel a new momentum; but they do not provide scientific evidence for this claim.

on migration decisions, because it is a key element of any local power/knowledge; hence, all migrants from that community are environmental migrants in some form or other, argues Carr.

Apart from confusions over what constitutes ‘the environment’, another definitional problem relates to the lack of clarity about the nature of migration. While some researchers refer to the analytical notion of refugees, others acknowledge the complex interplay of structure and agency which complicates the empirical distinction between forced and voluntary migrants. There is a long-standing debate on the distinction between forced (refugees) and voluntary migration. The review presented in this paper left out case studies dealing with migration that was more forced than voluntary. However, the analytical distinction between the categories of refugees and migrants is very blurred in practice, as most migration contains elements of force and volition (Richmond 1993; de Haas 2009). As Richmond notes, human agency implies an element of choice and ensures that some degree of uncertainty is always present, even when the choices in question are severely constrained by external conditions (Richmond 1993: 9). Meanwhile, taking the binary distinction between refugees and migrants for granted, researchers tend to assume that environmental or climate change is merely related to *forced* movements (Gemenne 2009). Yet, as the case studies show, environmental factors often play a role in “normal” migration decisions in the Sahel. While circumstances of life in the Sahel may be tough, particularly because of the vagaries and harshness of the climate, it would be wrong to assume that when people migrate it is an involuntary response to crisis, reflecting a lack of agency. Migration in the Sahel is often a normal part of a person’s livelihood and life course. Movements witnessed during drought have often been planned and initiated much earlier than the droughts, and play into greater patterns of migratory dynamics that are shaped, not only by environmental change but also, political and socio-economic factors.

Apart from the refugee-migrant distinction, another question that researchers often do not make explicit is the distinction between short- or long-distance migrations in connection with environmental change. The concept of migration tends to be applied to almost any kind of movement, and authors rarely make explicit how they actually define migration. As the reviewed case studies show, it is very unlikely that people affected by environmental change will migrate to the global North or even, cross the border into a neighbouring country, since most of the observed movements were within countries and often of relatively short distance. This takes us to another pertinent debate, which is whether it is not more appropriate to talk about mobility rather than migration in the context of environmental changes. The case study review shows that in most cases, movements associated with environmental change were more subtle and gradual and therefore difficult to characterise as migrations. Perhaps such moves are better captured with the term mobility.

Conceptual approaches

This section will provide a critical discussion of conceptual approaches to the study of the environment-migration nexus, focusing on the two main approaches that were identified in the beginning of this paper: Push factors versus Multi-level contextual factors. In addition, different approaches to migration and development will be discussed.

Push factors

While most contemporary case studies conclude that there is no linear stimulus-response relationship between drought and migration, the push factor type of studies do tend to present rather simplistic models to explain migration dynamics. These studies often attempt to provide clear answers to certain hypotheses regarding the causality between environmental change and migration (which may translate into policy recommendations). This objective is based on the assumption that causality exists, which can be discovered and described in scientific detail. Meanwhile, the authors tend to come up with the similar broad conclusion that ‘the environment and other factors contribute to migration’, without elaborating in detail what those other factors might be. This is for example the conclusion of Henry et al (2004). They argue that Burkinabe migrants are likely not “pulled” by rainfall conditions, but are rather attracted by job opportunities in plantations of coffee and cocoa in Cote d’Ivoire. Yet, these socio-economic factors are not covered by the data presented in their study.

A problem with the Push factor studies is a relative lack of consideration for the empirical and theoretical insights developed in the general field of migration studies. For example, both Henry et al (2004) and Van der Geest (2009) find it surprising that migration decreased during the severe drought years in the 1970s and ‘80s. Meanwhile, the fact that migration requires resources and that it is generally not the poorest people who migrate long distances is a well-established observation in contemporary migration studies. Meze-Hausken’s (2000) analysis lacks a historical and livelihoods perspective on migration dynamics in the study region and fails to apply newer migration theory. This leaves one wondering, why the Ethiopian farmers that the author denotes “climate migrants” had not migrated before famine set in; and why circular migration and migrant remittances did not feature as attempts to help out the drought-stricken villagers.

Studies framed by the push factor approach generally fail to apply and discuss relevant migration theory. Many of the studies are to some extent informed by neo-Malthusianism, but they do not explicitly mention this, nor do they reflect on the criticism of this approach. The study of environment and population interactions is longstanding in the social sciences, and various academic fields including migration studies, anthropology, geography and human ecology have contributed to moving the debate far beyond Malthusianism. The assumption that environmental change has a straight-forward and inevitable impact on population has been proved faulty; yet, this is still the starting point for many case studies, particularly those that set out to establish causality in the relationship between environmental change and migration. Moreover, push factor type of studies tend to rely on an economic framework of analysis. They focus mainly on macro-level structural factors and mainly use quantitative and secondary data. Henry et al (2004) for example, do not include data from first-hand contact with the migrants themselves and their study does not produce much in-depth insight into the complex motivations for migration, except for ruling out a few possibilities. It overlooks the significance of migrants’ subjective experiences and also does not distinguish between the migration of farmers and herders.

Economic theories do have significant merit in explaining migration dynamics, particularly newer theories such as the New Economics of Labour Migration (Stark 1991), which take into account the wider spectrum of migration motives than

individual income maximisation. Meanwhile, many of the case studies fail to apply such general migration theories, and often continue relying on rather obsolete push-pull frameworks. Van der Geest (2009) for example, develops a notion of 'environmental push and pull' to determine to what extent migrants from Northwest Ghana are forced to relocate due to environmental pressure. Environmental push suggests that people are forced out of their home region; environmental pull suggests that people can opt to relocate to a region with a more benign environment (van der Geest 2009:28). This theory does not account for agency and does not take constraints on migration decisions into account, and it is unlikely to produce any detailed insight, apart from establishing truisms.

Migration scholars have criticized the fundamental shortcomings of the push-pull frameworks. Such theories have been criticised for disregarding the agency of migrants and their households, and for not taking multi-causality into account, including networks and the cultural, historical, existential and political factors that tend to be part and parcel of migration decisions. Moreover, push-pull theories disregarded the complex interactions between migration and structural change and could not explain the phenomenon of cumulative causation (Massey 1990), where migratory movements, once started, become self-sustaining social processes (Castles and Miller 2009). Therefore, it does not seem theoretically progressive to "substitute" the economic paradigm by an environmental push-pull theory, as Van der Geest (2009) attempts to. Such an approach overemphasises the significance of environmental causes of migration. As most of the case studies have shown, it is problematic to single out the environment as an independent driver of migration and, as Gemenne (2009:147) writes, one can legitimately ask whether isolating environmental drivers is possible or makes conceptual sense.

Push factor studies also fail to explain non-migration. Afifi (2009) for example analyses coping mechanisms against environmental problems, mainly focusing on women left behind by husbands who have emigrated. However, it is not clear why these women themselves do not migrate and the author does not elucidate the power relations that determine who gets to migrate and who does not. Moreover, the author mentions respondents who were *not* willing to migrate, because they were attached to their regions or had adapted to the environmental problems. Yet, he does not analyse how and why these peoples' situation differs from those who have decided to migrate. Hence, it is not clear what causes people to stay in an environmentally degraded place rather than emigrating. Faulkingham and Thorbahn (1975) refer to the "cultural ecology" of Hausa communities to explain non-migration during drought. They argue that migration is deterred by cultural factors: because of patri-local and endogamous marriage practices in the community, residents felt that they would have no place to go if they were to emigrate, as they had no relatives or social networks outside the village. This explanation builds on a rather static and essentialising notion of culture that disregards the reality of social conflict and change, which may result in, for example, migration. If poor people acted as rational *homo economicus* presumed by neo-classical theories, one would expect them to move to the places where their chances of making a living are optimal, that is, prosperous countries in the global north. From a Eurocentric point of view, it seems easy to identify a long list of reasons why migrants from the South would want to enter the 'El Dorado' of the European welfare states. Yet, only about three percent of the world's population are international migrants. This raises a paradox: Why have not many more people left

the poor South? To explain this, researchers need to account for the barriers to migration (cf. Hammar and Tamas 1997; Malmberg 1997; Jonsson 2007)

Finally, the (environmental) push-factor approach to migration dynamics not only tends to ignore or downplay the social causes of migration; it also tends to reduce the complex causes of environmental change to climatic variables, like levels of precipitation. However, environmental changes, such as land degradation and drought (except meteorological drought) are often caused by interactions between humans and nature. Such environmental changes are therefore not naturally occurring phenomena (Blaikie and Brookfield 1991; Robbins 2004). At worst, the push factor approach de-politicises and de-contextualises the causes of migration – downplaying the importance of factors like wealth and welfare gaps or political conflict and portraying history, culture, identity, networks, household and livelihoods as rather insignificant factors in migration. Researchers need to consider the political consequences of their own normative and conceptual approaches and cannot be naïve about the impact their own analyses may have on their objects of study. Studies on environmental change and migration feed into political agendas concerning migration and refugee policies. The ‘push factor’ types of studies can be used to substantiate fears of future waves of third world migrants being pushed, not just by poverty and conflict but also, climate change, into the prosperous countries of the global North.

Multi-level Contextual factors

In her study of seasonal economic migration of the Fulani from Northern Burkina Faso, Hampshire writes that simple economic analysis falls a long way short of explaining the processes involved and understanding of who goes, why, and with what consequences (Hampshire 2002: 32). This seems to be the general motivation for the second category of studies, focusing on multi-level contextual factors. These studies tend to problematise approaches that establish simple causalities and instead, bring intermediating factors like politics, gender, culture and history into the picture. In this vein, Carr (2005) for example mentions that a discussion of ‘push factors’ may illustrate the interrelated nature of various factors causing migration, but does little to explain how these factors are linked in different households to create a particular migration outcome (Carr 2005:934).

Reflecting on conceptual frameworks in current migration studies, Stephen Castles laments that, “A key problem is the attempt to see migration as something distinct from broader social relationships and change processes” (Castles 2008:1). Castles argues that scholars can make significant progress by re-embedding migration research in a more general understanding of contemporary society. This is what several of the case studies on multi-level contextual factors attempt to do. For example, De Bruijn and Van Dijk (2003) showed that migratory movements are part of a structural transformation process and not merely caused by drought or climate change. Basset and Turner (2007) show how migration dynamics interact with broader socio-political and ecological processes of transformation. By highlighting the agency of the migrants, they challenge the stimulus-response model of “drought-migration” and show that causes of migration are complex and cannot be reduced to one single factor, such as drought.

The studies on multi-level contextual factors not only consider the complexity of causation but also, the complexity of migratory responses to environmental change.

Even if drought does influence migration, migratory responses to drought do not take a unique form. The studies by Mounkaila (2002) and De Bruijn and Van Dijk (2003) show that people who migrate in the context of environmental stress employ different migratory strategies. Mounkaila also shows that during drought, a number of adaptation and survival strategies are deployed before or in conjunction with migration. Ezra (2001) and Ezra and Kiros (Ezra and Kiros 2001) highlight the fact that under conditions of environmental stress, migration is considered an important strategy, yet it is part of a wider range of responses including for example, reduced fertility. Apart from these examples, the number of case studies explaining and comparing people's choices of different migratory or non-migratory responses is very limited, and this topic would be worthwhile exploring further. In order to understand why some people consider migration as a viable response to environmental change while others do not, it is necessary to consider the particular context, including history and traditions of migration, people's social networks and the role of migration and transnationalism in their lives and livelihoods. Here, the multi-level contextual approach is useful, because of its emphasis on contextual factors and meso- and micro-levels of analysis.

Despite the desire to question any simple causality between drought and migration, the *reciprocal and dynamic* links between migration and environmental change are strikingly absent from the literature. Development and socio-ecological transformations resulting from migration is hardly considered in any of the reviewed case studies, regardless of their conceptual approach. Researchers tend to focus solely on the causes of migration, despite the fact that causes and consequences are often closely related (cf. de Haas 2008). They thereby ignore the central issue of development and how it relates to environmental change and migration. This could potentially be integrated into the conceptual approach that focuses on multi-level contextual factors of migration, which is already questioning the linear causality between environmental change and migration and instead considers how events unfold over time and at multiple layers of social reality.

Graeme Hugo (1996) and François Gemenne (2009) both point out that feedback effects need to be included in the analysis of the environment-migration nexus. This includes feedback produced by the migration itself or by policies, which influence the nature of the relationship between population and environment. However, few of the studies reviewed here consider how migration and policy shape the (social and physical) environment under study, and how these changes in turn affect migration dynamics. There are still questions that need to be answered regarding how people adapt to environmental changes over the longer term and the role and impact of policy and migration in these processes. Researchers need to be critical to claims that migration represents the end stage of environmental degradation and a measure of last resort (cf. Pottier 1993 in Black 1998). Black (1998) argues that we need to question the assumption that particular responses to famine occur in sequence, the last and most severe of which is migration. Migration is not an end result which can be labelled as a problem, but forms part of the solution (Black 1998).

Migration and Development approaches

Another distinction that can be made amongst the case studies is based on how they conceive of the relationship between migration and development. A crude distinction can be made between alarmists, who insist on a strong causality between climate

change and migration and regard the ensuing migration as highly problematic, versus sceptics, who remain very critical of alarmist assumptions and normative judgements of migration. While alarmists may use the ‘environmental/climate migration’ concept to drum up support for increased environmental protection, a major problem with their discourse is that it appeals to anti-immigrant sentiments by construing migration as a problem, rather than an integral aspect of development processes.

Scholars working on the link between environmental change and migration do not always agree on how to interpret the relationship between migration and development. For example, Faulkingham & Thorbahn (1975:466) argued that urban migrants’ remittances did not make a significant difference to the starving rural population during drought in Niger, whereas Mounkaila’s study (2002) in the same country argued that migration is usually a strategy to *maintain* the rural population. This discrepancy in perspectives might be due to the changing context with the nearly thirty years’ time lapse between the two studies. But it may also be due to the changing discourse of migration, which used to be negatively interpreted as a “rural flight”, while currently, it is more considered as a livelihood strategy (de Haas 2008). Faulkingham and Thorbahn (1975) were writing in the context of increasing awareness of “rural flight” (or, “rural exodus”), where rural dwellers in developing countries migrated to the cities to seek employment. The prevailing paradigm was the under-development school view, which considered this migration as problematic and linked with rural poverty (Hampshire 2002: 16).

Most of the reviewed case studies do not explicitly refer to the different paradigms of ‘migration and development’. The general view of migration has changed since the end of colonialism and with increasing globalisation. Today, many migration scholars are no longer talking about “rural flight” and many agree that migration should not be thought of as a problem to be solved but rather, an integral part of broader social transformation processes (Castles 2008). Meanwhile, not only the older studies, but also many of the contemporary studies reviewed here are characterised by a pessimistic view of migration, supporting the view that migration is bad and rural people should be “kept in their place” (cf. Bakewell 2007). This is illustrated in the paper by Bleibaum (2009), who claims that most migrants want to return to the rural areas and that rural people should have the possibility of earning their living in rural areas – a rather generalising claim, considering the limited number of interviews conducted for the study. In such studies the image of migration is usually that of an ‘exode’, resulting from livelihood failure and constituting a last resort for starving villagers (cf. Hampshire and Randall 1999). But, as Hampshire (2002: 32) writes, people may use migration selectively as part of a range of strategies designed, not just to cope with livelihood failure, but to optimise livelihood security.

Two points need to be stressed regarding the interplay of environmental change, migration and development. Firstly, the case studies reviewed here show that long-distance international or intercontinental migration is a very unusual outcome of environmental change. Migration occurring in the context of poverty and hunger is usually short-distance, while international migration for example to Europe requires many resources and networks that these people simply do not have. We cannot just assume that phenomena like globalisation or transnational networks automatically facilitate international migration from South to North. Yet, despite these insights, many publications continue to argue that global migration and crossing of

international borders is going to be (or, is already) a major consequence of climate change¹⁷. Graeme Hugo, for example, claims that international destinations are of increasing significance to “environmental migrants”, but he does not present any evidence substantiating this statement (Hugo 2008: 14) (Hugo 1996: 119). Findley’s (1994) study can be read as a critical response to the fears of future waves of immigrants spurred by droughts in the Sahel. She showed that during drought, short-cycle circulation almost doubled while migrations to France almost halved and Mali itself became the preferred destination. These are important interventions against alarmist arguments which warn that future climate change will result in waves of migrants crossing international borders and settling permanently abroad (particularly, in the global North).

The second point to stress is the danger of construing migration *a priori* as a problem and an obstacle to development. An overwhelming amount of studies have found that migration can contribute to development; and vice versa, that income growth and, more generally, development tends to be associated with higher levels of migration (Beauchemin and Schoumaker 2005; de Haas 2006; de Haas 2008). Migration is not necessarily a symptom of failure and breakdown of social and physical structures. Under certain circumstances, migration can also be an opportunity for migrants, households and communities to maximise income, spread risk, increase welfare and accumulate symbolic and social capital (UNDP 2009). The pessimistic view of migration tends to be based on a sedentary bias, which considers mobility as abnormal and sedentarism as normal (cf. Bakewell 2007). Meanwhile, particularly in the Sahel, mobility is often the norm, and nomadism is a perfect example of how mobility can enable people to survive in marginal environments. De Bruijn and Van Dijk (2003) show that mobility is integral to Fulbe livelihoods and identity, and these people do not necessarily aspire to become sedentary. The problem for the Fulbe is not necessarily the mere fact of having to move in response to changing environmental conditions. Rather, the real problem seems to be the current unstable economic conditions that jeopardize their lives and livelihoods.

Conclusion: Ways forward for (empirical) research

While the climate science strongly suggests that climatic conditions will fundamentally change in many African countries, often for the worse, it is not clear how this will affect human mobility. The simplistic and alarmist views of several millions of displaced people moving across borders are based on very little evidence and take little account of the wide variation in responses to environmental stress that have been observed in different contexts. The empirical evidence reviewed in this paper reveals that environmental change does not automatically lead to long-distance international migration. It might affect human mobility in various ways, such as triggering more movements of short distances, but this observation in itself is not particularly useful for understanding the complex relationship between change and movement. Instead, we need to focus on understanding the details of how

¹⁷There are numerous examples of such unfounded claims about international migration resulting from environmental/climate change, publicised both by academia, the media, politicians and humanitarian organisations. Examples include: the African Union (see <http://www.irinnews.org/Report.aspx?ReportId=86805>); the UK Minister for Climate Change, Joan Riddock (see <http://www.clickgreen.org.uk/news/national-news/12719-government-launches-environmental-migration-study.html>); and humanitarian NGO Christian Aid (report from 2007: “Human Tide: The Real Migration Crisis”. London: Christian Aid).

environmental change impacts on people's lives and livelihoods, how they cope with it, and what role migration plays in such livelihood and coping strategies.

On the basis of the reviewed case studies, it appears whether and how migration is associated with environmental change depends upon the wider context, that is, the entire set of factors affecting migration. It is therefore unlikely that a general theory will emerge which can predict people's movements in response to environmental change. In the Sahel, it seems that whether and how people migrate in response to environmental change depends largely upon the role that mobility already plays in their lives and livelihoods: are they pastoral nomads, are they involved in seasonal migration to towns and cities or rural plantations, or are they averse to migrating and favour a more sedentary lifestyle? Whether and how drought-stricken people in the Sahel choose to move also depends on whether they have access to other income sources; their resilience and adaptive capacities; and whether migration complements other coping and adaptation strategies (Hampshire and Randall 1999; Morrissey 2009). This diversity of contextual factors entails a diversity of possible responses to environmental change, which may or may not include migration.

Judging from the reviewed empirical evidence, relatively short distance mobility has a much more pertinent relationship with environmental change, than long-distance international migration does. To understand the development implications of this dynamic, we need to understand more about the kinds of socio-economic ties that are maintained over relatively short distances, between the people who move and the area they leave behind. What feedback do short-distance moves have on areas that are environmentally degraded? We also need to consider if the theories on international migration and development apply to these shorter moves – that is, the dynamic, reciprocal links between development and short distance mobility.

Currently, it is a popular assumption that there *is* a significant relationship between migration and environmental change which can be documented and analysed. Meanwhile, we may well question whether there is such a direct link. Furthermore, our insights into this issue can only improve if scientific research sufficiently detaches itself from policy in order to scrutinise the issue from a more neutral perspective. Therefore, a policy-driven quest for numbers and predictions should not be steering the intellectual research on environment and migration.

There is a need for more clarity about the intellectual rationale for the scientific study of the environment-migration nexus. To claim that there is a lacuna of empirical data is too vague a statement to guide research on the nexus. We need to consider what exactly it is we want from empirical data: Do we merely want figures and estimates of environmental changes and migration flows?

The lack of data is often lamented in this debate. One can only agree that more research will enrich our understanding. Meanwhile, we must consider two main objections to this lamentation: 1. There *is* a body of empirical studies available, and there is a well-established debate on the relation between population and environment among geographers and demographers. However, policy makers and even researchers often fail to consider or are unaware of such knowledge. 2. It is important to recognise the limited predictive value of case studies. The case studies show that migration dynamics are context specific and findings are very hard to generalise; moreover,

migration cannot be explained in a deterministic linear way, its causes are complex and dynamic. Therefore, it is problematic to think that once we have enough empirical data, we can establish the exact nature of the causality between environmental change and migration.

Researchers often justify their studies of current or past interactions between environment and migration by making reference to the predictive value of the research, in terms of estimating the impact of future climate change upon migration flows. Yet, it could be argued that empirical studies of contemporary or historical cases are irrelevant to policy-making, because global warming will produce climate changes that are of an *unprecedented* scale, which cannot be compared to anything experienced in the past. Hence, the changes that will occur in terms of environment and migration are unpredictable.

If the predictive value, generalisability and policy relevance of this research is contested, does that render the whole debate futile? The answer partly depends on whether researchers manage to broaden the scope of the debate. For example, few have attempted to synthesize the findings from several case studies, in order to establish a broader overview of past and current dynamics and develop empirically founded conceptualisations of the environment-migration nexus. This is one way to carry forward the debate. It would also be helpful to broaden the debate by not considering the relationship between environmental change and migration in a deterministic manner.

It would also be useful to connect the specific debate on environmental change and migration to theoretical and empirical insights of mainstream migration research. There is a need for more critical attitudes towards rather obsolete migration theories. Many of the reviewed case studies draw on quite simplistic frameworks to explain migration, largely ignoring wider theoretical debates on the relation between population and environment and the relation between development and migration. A viable starting point for future research would be to largely abandon concepts such as population pressure and push-pull frameworks and to integrate environmental factors into general theories on the causes of migration.

In migration studies, the interest in environmental change is largely fuelled by an interest in considering the influence of natural processes on migratory dynamics. However, it is very complex, if not to say impossible, to isolate the effects of environmental change from other processes of (social, cultural, economic, political) change affecting migration. Most eco-systems on the planet are socially modified and the distinction between the natural and the socially engineered and constructed environment is by no means clear-cut. Most natural processes are intertwined with social processes. This makes it highly doubtful that migration studies needs a separate theory to explain migration in the context of environmental change.

References

- Afifi, T. (2009). Niger Case Study Report. EACH-FOR Environmental Change and Forced Migration Scenarios.
- Bakewell, o. (2007). Keeping Them in Their Place: the ambivalent relationship between development and migration in Africa. Working Paper Series. I. M. Institute. Oxford, International Migration Institute, University of Oxford.
Working paper 8.
- Bassett, T. J. and M. D. Turner (2007). "Sudden Shift or Migratory Drift? Fulbe Herd Movements to the Sudano-Guinean Region of West Africa." Human Ecology **35**(1): 33-49.
- Beauchemin, C. and B. Schoumaker (2005). "Migration to cities in Burkina Faso: Does the level of development in sending areas matter?" World Development.
- Black, R. (1998). Refugees, environment and development. UK and USA, Addison Wesley Longman.
- Black, R. (2001). Environmental refugees: myth or reality? New issues in refugee research. Geneva, UNHRC.
- Black, R. and M. Sessay (1997). "Forced migration, environmental change and woodfuel issues in the Senegal River Valley." Environmental Conservation **24**: 251-260.
- Blaikie, P. and H. Brookfield (1991). Land Degradation and Society. London, Routledge.
- Bleibaum, F. (2009). Senegal Case Study Report. EACH-FOR Environmental Change and Forced Migration Scenarios.
- Bloomer, J. (2009). "Using a political ecology framework to examine extra-legal livelihood strategies: a Lesotho-based case study of cultivation of and trade in cannabis." Journal of Political Ecology **16**: 49-69.
- Boserup, E. (1965). The Conditions of Agricultural Growth: The Economics of Agrarian Change under Population Pressure. London, Routledge.
- Brooks, N. (2006). Climate change, drought and pastoralism in the Sahel. The World Initiative on Sustainable Pastoralism.
- Bryant, R. L. (1992). "Political Ecology: An emerging research agenda in Third-World studies." Political Geography **11**(1): 12-36.
- Carr, E. R. (2005). "Placing the environment in migration: environment, economy, and power in Ghana's Central Region." Environment and Planning A **37**(5): 925-946.
- Castles, S. (2002). Environmental change and forced migration: making sense of the debate. Geneva, Evaluation and Policy Analysis Unit, United Nations High Commissioner for Refugees.
- Castles, S. (2008). Understanding Global Migration: A Social Transformation Perspective (Draft paper). Conference on Theories of Migration and Social Change. St Anne's College, University of Oxford,
<http://www.imi.ox.ac.uk/pdfs/stephen-castles-understanding-global-migration>.
- Castles, S. and M. J. Miller (2009). The Age of Migration: International Population Movements in the Modern World, Palgrave Macmillan.
- de Bruijn, M. and D. van Dijk (2003). "Changing Population Mobility in West Africa: Fulbe pastoralists in central and south Mali." African Affairs **102**(407).
- de Haas, H. (1998). Socio-Economic Transformations and Oasis Agriculture in Southern Morocco. Looking at Maps in the Dark: Directions for Geographical

- Research in Land Management and Sustainable Development in Rural and Urban Environments of the Third World. L. d. Haan and P. Blaikie. Utrecht/Amsterdam, KNAG/FRW UvA: 65-78.
- de Haas, H. (2001). Migration and agricultural transformations in the oases of Morocco and Tunisia. Utrecht, KNAG.
- de Haas, H. (2006). Turning the tide? Why 'development instead of migration' policies are bound to fail. Working Paper Series. I. M. Institute. Oxford, International Migration Institute, University of Oxford. **Working Paper 2**.
- de Haas, H. (2007). The Myth of Invasion: Irregular migration from West Africa to the Maghreb and the European Union. U. o. O. International Migration Institute.
- de Haas, H. (2008). Migration and Development: a theoretical perspective. Working Paper series. I. M. Institute. Oxford, International Migration Institute, University of Oxford. **9**.
- de Haas, H. w. O. B., Stephen Castles, Gunvor Jónsson and Simona Vezzoli (2009). Mobility and Human Development I. Working Paper series. I. M. Institute. Oxford, International Migration Institute, University of Oxford. **14**.
- de Sherbinin, A., D. Carr, et al. (2007). "Population and Environment." Annu. Rev. Environ. Resour **32**: 345-373.
- Ellis, F. (2003). A Livelihoods Approach to Migration and Poverty Reduction. D. f. I. D. (DFID). London.
- Ezra, M. (2001). "Demographic responses to environmental stress in the drought- and famine-prone areas of northern Ethiopia." International Journal of Population Geography **7**(4): 259-279.
- Ezra, M. and G.-E. Kiros (2001). "Rural Out-Migration in the Drought Prone Areas of Ethiopia: A Multilevel Analysis." International Migration Review **35**(3): 749-771.
- Falk, W. W., M. O. Hunt, et al. (2006). "Hurricane Katrina and New Orleanians' Sense of Place: Return and Reconstitution or 'Gone with the Wind'?" Du Bois Review: Social Science Research on Race **3**(1): 115-128.
- Faulkingham, R. and P. F. Thorbahn (1975). "Population Dynamics and Drought: A Village in Niger." Population Studies **29**(3): 463-477.
- Findley, S. E. (1994). "Does Drought Increase Migration? A Study of Migration from Rural Mali during the 1983-1985 Drought." International Migration Review **28**: 539-553.
- Garcia-Zamora, R., O. Perez-Veyna, et al. (2007). "Paradoxes of International Migration and the Environment." Economia, Sociedad y Territorio **vol. 6**(24): 975-994.
- Gemenne, F. (2009). Environmental Changes and Migration Flows - Normative Frameworks and Policy Responses. Political Science. Liège, Belgium, University of Liège. **Doctorate in Political Science**.
- Gianninia, A., M. Biasuttia, et al. (2008). "A climate model-based review of drought in the Sahel: Desertification, the re-greening and climate change " Global and planetary Change **64**(3-4): 119-128.
- Goldhaber, M. K., P. S. Houts, et al. (1983). "Moving after the Crisis: A Prospective Study of Three Mile Island Area Population." Environment and Behavior **15**(1): 93-120.
- Greenwood, M. J., G. H. McClelland, et al. (1997). "The effects of perceptions of hazardous waste on migration: a laboratory experimental approach." Review of Regional Studies **27**(2): 143-61.

- Gupta, A. K., D. M. Anderson, et al. (2006). "Adaptation and human migration, and evidence of agriculture coincident with changes in the Indian summer monsoon during the Holocene." Current Science **90**(8): 1082-1090.
- Guyer, J. I., E. F. Lambin, et al. (2007). "Temporal Heterogeneity in the Study of African Land Use: Interdisciplinary Collaboration between Anthropology, Human Geography and Remote Sensing." Human Ecology **35**(1): 3-17.
- Hammar, T. and K. Tamas (1997). Why do people go or stay? International Migration, Immobility and Development. T. Hammar, G. Brochmann, K. Tamas and T. Faist. Great Britain, Berg.
- Hampshire, K. (2002). "Fulani on the move: Seasonal economic migration in the Sahel as a social process." Journal of Development Studies **38**(5).
- Hampshire, K. and S. Randall (1999). "Seasonal labour migration strategies: coping with poverty or optimising security?" International Journal of Population Geography **5**(5): 367-385.
- Henry, S., P. Boyle, et al. (2003). "Modelling inter-provincial migration in Burkina Faso, West Africa: the role of socio-demographic and environmental factors." Applied Geography **23**(2-3): 115-136.
- Henry, S., V. PichAco, et al. (2004). "Descriptive Analysis of the Individual Migratory Pathways According to Environmental Typologies." Population and Environment **25**(5): 397-422.
- Henry, S., B. Schoumaker, et al. (2004). "The Impact of Rainfall on the First Out-Migration: A Multi-level Event-History Analysis in Burkina Faso." Population and Environment **25**(5): 423.
- Hugo, G. (1996). "Environmental concerns and international migration." International Migration Review **30**(1): 105-31.
- Hugo, G. (2008). Migration, Development and Environment. IOM Migration Research Series. IOM, IOM. **35**.
- IPCC (2007). Summary for Policymakers. Climate Change 2007: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change. M. L. Parry, O. F. Canziani, Palutikof, J.P., O. J. van der linden and C. E. DHanson. Cambridge, UK, Cambridge University Press.
- Jonsson, G. (2007). The Mirage of Migration. Migration Aspirations and Immobility in a Malian Soninke Village. Institute for Anthropology. Copenhagen, Denmark, University of Copenhagen. **cand.scient.anth.**
- Kniveton, D., K. Schmidt-Verkerk, et al. (2008). Climate Change and Migration: Improving Methodologies to Estimate Flows. IOM Migration Research Series. IOM. Geneva, IOM. **No. 33**.
- Malmberg, G. (1997). Time and Space in International Migration. International Migration, Immobility and Development. T. Hammar, G. Brochmann, K. Tamas and T. Faist.
- Massey, D. S. (1990). "Social Structure, Household Strategies, and the Cumulative Causation of Migration." Population Index **56**: 3-26.
- Meze-Hausken, E. (2000). "Migration caused by climate change: how vulnerable are people in dryland areas? A case study in Northern Ethiopia." Mitigation and Adaptation Strategies for Global Change **5**(4): 379-406.
- Morrissey, J. (2009). Environmental Change and Forced Migration: A State of the Art Review. Oxford, Refugee Studies Centre, University of Oxford

- Mounkaila, H. (2002). "De la migration circulaire à l'abandon du territoire local dans le Zarmaganda (Niger) " REMI (Revue Européenne des Migrations Internationales) **18**(2).
- Myers, N. (1993). "Environmental Refugees in a Globally Warmed World." BioScience **43**(11).
- Myers, N. (1997). "Environmental Refugees." Population and Environment **19**(2).
- Myers, N. (2001). "Environmental refugees: a growing phenomenon of the 21st century." Philosophical Transactions of the Royal Society, London - B **356**.
- Myers, N. (2005). Environmental Refugees: An Emergent Security Issue. 13th Economic Forum. Prague.
- Myers, N. w. J. K. (1995). Environmental Exodus: An Emergent Crisis in the Global Arena. C. Institute. Washington DC.
- Neumayer, E. (2006). "An Empirical Test of a Neo-Malthusian Theory of Fertility Change." Population and Environment **27**(4): 327-336.
- Olsson, L., L. Eklundh, et al. (2005). "A recent greening of the Sahel — trends, patterns and potential causes " Journal of Arid Environments **63**(3): 556-566.
- Pedersen, J. (1995). "Drought, Migration and Population Growth in the Sahel: The Case of the Malian Gourma: 1900-1991." Population Studies **49**(1): 111-126.
- Piguet, E. (2009). Environment and Migration: A Methodological Challenge Environmental Change and Migration: Assessing the Evidence and Developing Norms for Response. University of Oxford, Refugee Studies Centre and the International Migration Institute.
- Richmond, A. H. (1993). "Reactive Migration: Sociological Perspectives on Refugee Movements." Journal of Refugee Studies **6**(1).
- Robbins, P. (2004). Political Ecology: A critical introduction. United Kingdom, Blackwell publishing.
- Saunders, P. L. (2000). Environmental refugees - The origins of a construct. Political Ecology: Science, Myth and Power. P. Stott and S. Sullivan. London, Arnold.
- Stark, O. (1991). The migration of labor. Cambridge & Oxford, Blackwell.
- Suhrke, A. (1994). "Environmental degradation and population flows." Journal of International Affairs **47**(2): 473-496.
- UNDP (2009). Overcoming barriers: Human mobility and development. Human Development Report. U. N. D. P. (UNDP).
- van der Geest, K. (2009). Migration and natural resources scarcity in Ghana. EACH-FOR Environmental Change and Forced Migration Scenarios.