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To cite this article: Michael Brzoska & Christiane Fröhlich (2016) Climate change, migration and violent conflict: vulnerabilities, pathways and adaptation strategies , Migration and Development, 5:2, 190-210, DOI: [10.1080/21632324.2015.1022973](https://doi.org/10.1080/21632324.2015.1022973)

To link to this article: <https://doi.org/10.1080/21632324.2015.1022973>



Published online: 30 Mar 2015.



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Climate change, migration and violent conflict: vulnerabilities, pathways and adaptation strategies

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(Received 30 August 2014; final version received 20 February 2015)

It has often been predicted that large numbers of people will be displaced by climate change and that this will lead to violent conflict. At the core of this prediction is a simple causal model which assumes that climate change will result in resource scarcities, which in turn will drive migration as well as violent conflict. Academic research into the links between climate change, migration and conflict has questioned such predictions; their theoretical foundation and empirical support are thin. This does not mean that climate change will be irrelevant for future patterns of migration, including migration that may be linked to violent conflict. However, it has become clear that the links between climate change, migration and conflict are complex and defy simple and sensationalist conclusions. After outlining the state of the art on climate migration and the environment–migration–conflict nexus, this article sketches the environmental, economic and sociopolitical consequences of climate change contributing to migration and the different functions of migration in this context, for instance as an adaptive strategy to environmental change. It then delineates the different theorized pathways from migration to conflict escalation, evaluates their analytical value and develops a more differentiated model of the assumed links between climate change, migration and conflict.

Keywords: migration; conflict; climate change; vulnerability; adaptation

The mainstream understanding of the security implications of climate change is that it will overstretch many societies' adaptive capacities within the short- to midterm, potentially leading to destabilization and violence, jeopardizing national and international security in a way which is unprecedented, unless resolute counteraction is taken (United Nations Security Council [UNSC], 2007; United Nations General Assembly [UNGA], 2009; German Scientific Advisory Council on Global Environmental Questions [WBGU], 2007). One major concern is that climate change might deepen pre-existing lines of division and conflict in international relations, if the international community fails to adopt a dynamic and globally coordinated climate policy. Even if states are willing to adopt such policies, conflicts over compensation payments between those states which are mainly responsible for climate change and those most affected by it may block effective measures. A particular worry, furthermore, is conflicts over resources. In the judgment of many authors, reduced availability and changes in the distribution of water, food and arable land are prone to trigger violent conflicts (Burke, Miguel, Satyanath, Dykema, & Lobell, 2009; Hsiang, Burke, & Michael, 2013). In addition,

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there are multiple pathways through which climate change is thought to contribute to the onset of violent conflict, such as a deterioration of the governance capacities of formal and informal institutions and the increase in horizontal inequality among groups (Gleditsch, 2012; Scheffran, Marmer, & Sow, 2011). Migration might affect these relationships between climate change and conflict in addition to what is looked at in studies focusing on direct links.

This article singles out one mediating factor between climate change on the one hand and conflict escalation on the other, namely climate change-induced migration (climate migration in the following), and reviews the assumed causalities between climate change and migration on the one hand and migration and conflict escalation on the other.

Large migration movements, regardless of their causes, have frequently been presented as a threat to national and international security, particularly when crossing into the United States and Europe (Adamson, 2006; Alexseev, 2006; Ceccorulli & Labanca, 2014; Huysmans, 2000; Waever, Buzan, Kelstrup, & Lemaitre, 1993). Since large numbers of people have been predicted to be displaced by climate change, climate migration has often been considered to be one of the main security risks of global warming (Brown, 2008; Myers, 1991, 1998, 2005; Myers & Kent, 1995). In its first assessment report, for instance, the Intergovernmental Panel on Climate Change (IPCC) warned in 1990: 'the gravest effects of climate change may be those on human migration as millions are displaced by shoreline erosion, coastal flooding and severe drought' (IPCC, 1990, p. 20). This was the basis for predictions of major conflict in receiving regions both within countries suffering from climate change and internationally. In 2008, the European Commission and the EU's High Representative for the Common Foreign and Security Policy released a report on climate change and international security in which they stressed that as a result of climate change, 'Europe must expect substantially increased migratory pressure' (Council of the European Union, 2008, p. 4).

At the core of such predictions was the conviction that climate change will engender or exacerbate resource scarcities, which in turn might drive migration as well as conflict. Climate migration has thus been presented as a phenomenon causing instability and violence. However, there are few systematic studies researching this causality (Raleigh, 2010; Raleigh, Linke, Hegre, & Karlsen, 2010; Reuveny, 2007, 2008). On the contrary, academic research into the links between climate change, migration and conflict has predominantly been critical about such predictions. There is, so far, limited evidence both for the proposition that climate change will lead to major population movements as well as that modern migration movements generally trigger violent conflict. The theoretical foundation and empirical support for such propositions are thin. This does not mean that climate change will be irrelevant for future patterns of migration, including migration that may be linked to conflict. However, this article shows that the links between climate change, migration and conflict are complex and defy simple and sensationalist conclusions.

After outlining the state of the art on climate migration and the environment-migration-conflict nexus, we sketch (a) the environmental, economic and sociopolitical consequences of climate change contributing to migration, and (b) the different functions of migration in this context, for instance as an adaptive strategy to environmental change. Then, we concentrate on the nexus between migration and conflict by delineating the different theorized pathways from migration to conflict escalation and evaluating their analytical value.

1. Issues and contributions

Modern academic research on the relationship between the environment and conflict began in the 1980s as a theme in peace and conflict studies (Connelly & Kennedy, 1994; Kaplan, 1994; Mathews, 1989; Myers, 1993; Westing, 1992, 1994). It focused on environmental degradation and scarcity of renewable resources as a cause of violent conflict. Even though a central finding of this line of research was that environmental factors are not by themselves causing violent conflict, researchers found considerable evidence that environmental degradation and resource scarcity can contribute to the likelihood of violent conflict when coinciding with other conflict drivers, such as ethnic polarization, weak political structures and low levels of economic development (Bächler, Böge, Klötzli, Libiszewski, & Spillmann, 1996; Homer-Dixon, 1999; Kahl, 2006).

Migration was considered one of the pathways of linking environmental degradation and violent conflict. Particular attention was paid to conflicts between pastoralists and farmers. Thus, it was posited already in the 1990s that conflicts in the Darfur region of Sudan were strongly influenced by lack of rainfall (Bächler et al., 1996). In general, migration was seen as potentially contributing to resource scarcity in receiving regions. In consequence, violent conflicts could be expected in receiving regions with a lack of stable structures and institutions to prevent or mediate resource scarcity (Homer-Dixon, 1999; Reuveny, 2007, 2008).

However, later authors investigating the link between resource scarcity and violent conflict have largely expressed scepticism. This is particularly true for researchers using quantitative methods to comparatively analyse large numbers of cases.

Recent research on global warming and its consequences for global peace has revived and extended the earlier research on environmental scarcity. A broader set of environmental issues was considered (Buhaug, Gleditsch, Holtermann, Ostby, & Tollefsen, 2011; Buhaug, Gleditsch, & Theisen, 2010; Soysa, 2002). For instance, extreme weather events and ensuing disasters received attention in addition to slow-onset environmental change. But resource scarcity remained the core issue of concern. Thus, initial claims of the conflict potential of climate migration echoed those of the early research on environmental scarcity: migration resulting from climate change was considered one of the more likely scenarios for the onset and/or escalation of conflict in the context of climate change (Barnett, 2003; Smith & Vivekananda, 2007). This was particularly emphasized in the literature aiming at policy makers (CNA, 2007; UNGA, 2009; WBGU, 2007).

While not ignoring the complexity of the consequences of migration, the environmental scarcity literature selectively emphasized environmental factors as drivers of migration. Such an emphasis, however, runs counter to the mainstream of migration studies. Modern migration research has largely been dismissive of claims that migration leads to or facilitates conflict, except in special cases of ‘militarized migration’ such as cross-border movements of armed fighters (Muggah, 2006). Most of migration research has been particularly sceptical about the claim that conflicts over resources lead to violence in receiving regions. While it is not difficult to find such cases, they do not seem to be very frequent (Raleigh & Urdal, 2007). In a similar vein, more recent studies on the relationship between global environmental change, including climate change, and migration have voiced scepticism towards simplistic causal models (Black, Adger, et al., 2011; Black, Bennett, Thomas, & Beddington, 2011; Black, Kniveton, & Schmidt-Verkerk, 2011; Warner, 2011).

In a nutshell, there is no theoretical approach as yet which adequately represents the relationship between ecologically induced migration movements and conflict. Difficulties

arise on several levels. Environmentally induced population movements are usually internal, temporary and short term; they most often occur in developing or emerging states. Moreover, it is necessary to differentiate between migration caused by slow-onset events, such as droughts and land degradation, and those caused by fast-onset events, such as floods, storms or fires. While the former are usually voluntary and often economically motivated, the latter are involuntary and tend to be short term.

In addition, there is no common understanding or definition yet of people who leave their traditional habitat due to environmental and/or climate change. On the contrary, the terms ‘environmental refugee’ and ‘climate refugee’ are harshly contested. Critics reject the underlying mono-causality and fear that the existing security warrants for traditional refugees be undermined, while proponents of provisions for legal rights of climate refugees argue that they are victims of actions beyond their control.

Even more disagreement is related to the projected number of people who may leave their habitat for environmental or climate reasons in the future: the so-called maximalist approach assumes a simple, direct relationship between environmental change and population movements and thus projects comparatively large numbers of environmental migrants. Estimates reach from some 200 million up to 1 billion refugees in 2050 (Jacobson, 1988; Myers, 1997, 2002; Stern, 2006). These estimates are strongly questioned by the so-called minimalists, who underscore the complex nature of migration decisions and who stress the respective society’s vulnerability and adaptive capacity as a major factor for reducing the expected number of climate migrants (Castles, 2002; Gemenne, 2011; Morrissey, 2009; Suhrke, 1994. Morrissey (2012) gives a good overview). In any case, numbers on both sides of this academic divide remain highly speculative, since still there is no reliable data base for sound migration estimates.

2. Models and empirical cases

The hypothesized potential of climate change to increase violent conflict is many-fold (Scheffran, Brzoska, Kominek, Link, & Schilling, 2012). For instance, climate change may increase competition over natural resources to such a degree that it becomes violent, or undermine the capacity of institutions, traditional and non-traditional, to mediate and solve conflict. Migration adds to the number of potential links between climate change and violent conflict, but also introduces additional buffers, which may alleviate the pressures of climate change on societies.

While there is controversy over the core elements of the relationship between climate-induced migration and violent conflict, a number of models of potential

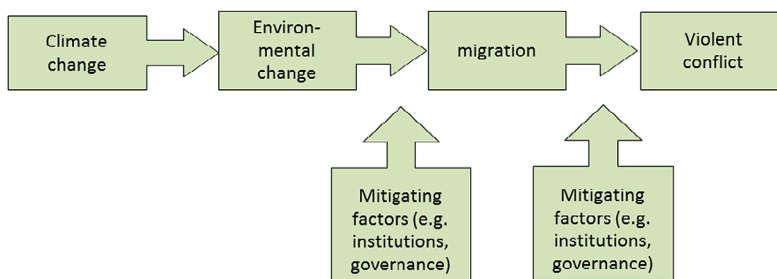


Figure 1. ‘Classical model’ of climate change, migration and violent conflict.

causality have been developed. In essence, they follow the two-step logic depicted¹ in Figure 1. Climate change is seen as a driver for migration, and migration as a driver for violent conflict in receiving regions. No model assumes automatic effects of climate change on migration nor of migration on violence in receiving regions. Differing factors, which influence effects, are generally introduced in both sections of the models. Prominent among these are the level of income in the regions affected by climate change and the capabilities of institutions and governance structures to deal with inequalities arising from changes in the overall availability of resources. With respect to the likelihood of climate-induced migration inducing or fostering conflict in receiving regions, newer research has emphasized the importance of adequate structures and institutions (Bakewell, 2010; Jakobeit & Methmann, 2012).

Models exploring mediating factors of the causal path from climate change to migration to violent conflict include suggestions by the German Scientific Advisory Council on Global Environmental Questions (WBGU), by Reuveny and by Gleditsch, Nordås and Salehyan. The WBGU proposed a pathway directly linking climate change with conflict but identifying intervening personal, group and societal factors (WBGU, 2007).

While these and other models are plausible, they need to be substantiated through empirical evidence. Empirical support so far is scant. The available empirical evidence, while generally supporting the importance of mediating factors identified in the theoretical literature on the causal pathway from climate change to migration to violent conflict, crucially points to the under-complexity of existing models. As mentioned above, effects of climate change on local livelihoods differ in several dimensions. Furthermore, only in extreme cases are decisions to migrate shaped by livelihood conditions in regions affected by climate change, and even then, factors unrelated to climate change may be important, such as the availability of external humanitarian assistance or existing social networks. In most cases, the decision to migrate will be shaped by many factors beyond changes in resource availability in a location, including conditions in potential receiving regions but also group, family and gender relations. Similarly, case studies point to the complexity of the relationship between population movements and violent conflict. Even where violent conflict has often been seen as most likely to erupt, such as in the Sahel zone, where farmers and herders compete for scarce resources, the evidence is mixed, and it remains difficult to explain reality with linear models linking migration to violent conflict (Benjaminsen, Alinon, Buhaug, & Buseeth, 2012; Raleigh et al., 2010).

Moreover, case studies seemingly contradict each other, making generalized statements difficult. For instance, Bangladesh and north India are considered a prime example for the relationship between environmentally induced migration movements and armed conflict: settling Bengali flood and storm victims on native land in the Chittagong Hill Tracts aggravated a drawn-out guerrilla war which ended in the late-1990s (Adnan, 2004; Reuveny, 2008). The Indian states Assam and Tripura also experienced violence between Bengali immigrants and the native population (Bhattacharyya & Werz, 2012). The reasons include an upsetting of the ethnic balance in the region as well as competition over resources between natives and immigrants. Refugees who enjoy support by the state and thus have a voice, who differ from the native population in ethnicity, nationality and/or religion, who have experienced violent conflict with the receiving population earlier and who want to settle long term in the receiving area seem to be more prone to violence than others.

An opposite case where migration, which at least partly was linked to worsening environmental conditions, helped to improve living conditions and reduce conflict potential has been described for communities in north-west Africa (Scheffran, Marmer,

& Sow, 2012). Migrants from that region to other parts of the world, including rich countries, have been found to invest in projects which increase resilience to climate change as well as economic improvement in home regions.

Other examples of complexity include the debates of the effects of environmental disasters on violent conflict and on the vanishing of small islands through sea level rise. On environmental disasters, migration and conflict, two major studies come to contradictory results (Nel & Righarts, 2008; Slettebak, 2012). The same is true for sea level rise and conflict: while some argue sea level rise may lead to conflict resolution (Mia, 2013), others expect rising conflicts (Bender, 2013; Press, Bergin, & Garnsey, 2013), while systematic studies are still lacking.

In many more cases, the relationship between migration due to environmental changes and the onset of violence remains unclear. South Iraqi farmers have to move into already over-populated urban centres, since large-scale dam constructions in Iraq, Syria and Turkey have considerably reduced water availability (Montenegro, 2009). Syrian farmers from what used to be the region's bread basket have lost their livelihoods due to an extended drought period (2006–2010), which massively reduced the amount of arable land and heightened the pressure on already scarce water resources (Kelley, Mohtadi, Cane, Seager, & Kushnir, 2015; Worth, 2010). The ensuing internal migration from rural to urban centres and urban periphery may even have contributed to the current conflict in Syria – but the evidence is not clear as yet. In Palestine, farmers have to adjust to increased rainfall variability, while industrial farmers in Israeli settlements receive subsidized water for irrigation, contributing to the overall conflict.

The lack of conclusive evidence linking climate change with migration and conflict may be due to several factors.² For one, there is a limited extent of climate change so far, so past data may not be representative of future trends. Even though, for instance, extensive droughts, floods and local environmental change have also occurred in the past and can thus be used for analysis, it is not clear whether past conditions will prevail in the future.

Another plausible reason for the lack of accumulative evidence may be the under-complexity of current understanding and modelling. Both of the links between climate change and migration as well as those between migration and violent conflict are embedded in wider contexts of conflict and transformation, in the home as well as receiving regions, which makes it difficult to isolate just these links. This is true both for single cases, which can go in opposite directions as shown below, as well as for cross-national analyses.

In what follows, we present a more differentiated model of the links between climate change, migration and conflict.

3. Global environmental change and migration: a non-linear relationship

We begin our attempt to provide a more differentiated view than the above-mentioned two-step models by looking at the link between environmental change and migration. We also introduce two concepts, which have broad applications but have increasingly been used to deal with the complexity surrounding both the links between climate change and migration as well as between climate migration and conflict: vulnerability and adaptation.

3.1. Consequences of climate change

Three possible outcomes of extreme events, both rapid and slow-onset, have been identified in terms of population movements: migration (voluntary and forced), displacement and immobility (Black, Arnell, Adger, Thomas, & Geddes, 2013; see Figure 2). Each of them corresponds with multiple drivers and is embedded in socio-economic, political and demographic processes. In addition, climate change may affect the livelihoods and movements of permanent migrants, such as herders in some parts of Africa and Asia, for instance through changing precipitation patterns which overthrow century-old crop cycles on which migration patterns depend: nomads following traditional migration paths and timing, who were used to feed their livestock on harvested fields, may now encounter premature crops due to changing climatic conditions, which may lead to conflict with the sedentary population depending on agriculture.

For the most part, environmental factors are usually merely a contributing factor to the decision to migrate. They are one of five main drivers for migration (Black, Adger, et al., 2011), namely economic, political, demographic, social and environmental, which are themselves mediated through socially, politically and economically determined institutions and structures that influence human mobility. This entails what Castles (2002) has termed ‘conceptual fuzziness’, meaning that it is very difficult to determine the extent to which the environment has played a role in a specific migration decision, unless migration has followed a fast-onset environmental event such as a flood. In addition, environmental causes in many cases operate through non-environmental causes (Hugo, 2013). A migrant who moves because he can no longer sustain himself through agriculture as a result of drought and ensuing land degradation will often categorize the reasons for his movement as economic, not environmental. Therefore, environmental change has mostly been defined as a proximate cause of migration, and in order to fully understand the effect of environmental change on migration, it is essential to analyse it within the context of all other direct and indirect impacts on migration.

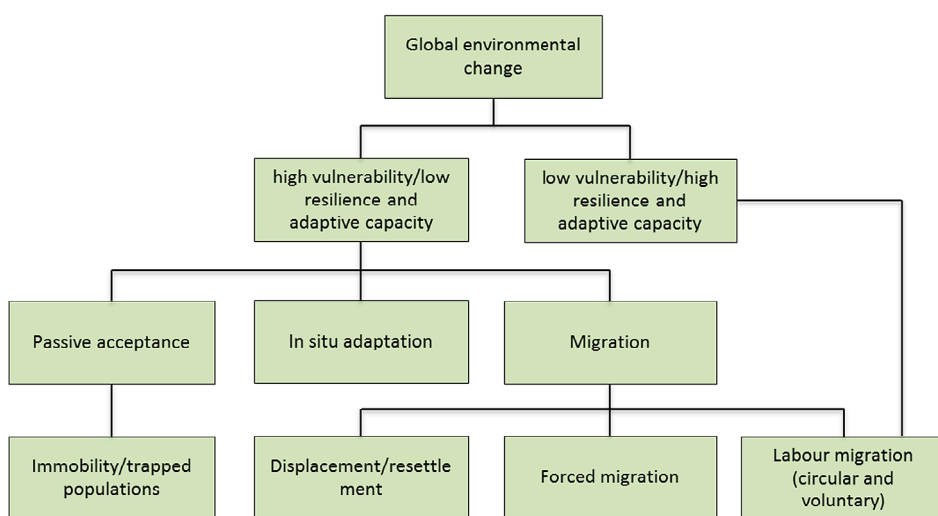


Figure 2. Migration patterns in response to global environmental change.

Another factor influencing environmentally induced migration is previous mobility in the respective area. Such previous mobility may or may not have been influenced by environmental factors; in any case, it would have established linkages to certain migration destinations which form so-called migration corridors, along which present and future migrants will move because they involve less transaction costs than non-linear moves to new destinations. Thus, past migrations most likely exert an influence on whether people will move in response to environmental change, and if yes, where.

3.2. *Vulnerability, adaptation and migration*

Today, the majority of researchers assume that climate change and its effects can best be understood in conjunction with vulnerability (Scheffran et al., 2012). Vulnerability is measured by analysing an entity's individual adaptive capacity to and the potential impact of climate change, the latter indicated by the respective exposure to its consequences as well as the entity's sensitivity towards them (Fay, Block, & Ebinger, 2010). According to this definition, vulnerability rises when the impact of climate change, such as rainfall variability, weather extremes, sea level rise, desertification, floods, and land degradation, is negatively influencing the natural resource base (high exposure).

If these environmental challenges are not met with effective governance structures and integrated planning for adaptation (high sensitivity towards effects of climate change), they are assumed to negatively affect livelihoods and health as well as standard of living and other factors of human security, which in turn potentially contributes to or lays the ground for sociopolitical instability in the form of political unrest, insurgencies and state fragility. In addition, it may engender mass migration movements towards more resource-rich areas.

Vulnerability to the effects of climate change commonly increases where the dependence on renewable natural resources for survival is direct and high; this means that farmers and pastoralists are particularly vulnerable, since they depend on livestock and harvests for their livelihoods which are vulnerable to floods and droughts. Pastoralism is mostly practised in arid and semi-arid lands characterized by low and erratic rainfall and high annual average temperatures (Disperati et al., 2009).

The concept of vulnerability thus neither denies nor promotes a linear causality between climate change and its effects on human societies; instead, it maps the complex interrelations between, among others, the effects of climate change, natural resource management, demography, urbanization and industrialization dynamics as well as the respective sociopolitical context. Black et al. (2013) define two competing paradigms of vulnerability to natural hazards: (1) the behaviouralist paradigm, which assumes that natural disasters are mainly due to a lack of effective planning of responses and a general lack of preparedness, and (2) the structuralist paradigm, which focuses on the deeply ingrained societal structures which determine who is vulnerable to climate change when and to what extent. The latter focuses on power and resource distribution, wealth inequalities and resulting inter-dependencies.

The effects of global warming can be differentiated into rapid-onset extreme events, such as floods and storms, and slow-onset events such as droughts or land degradation, with both engendering different reactions. It is rather obvious that migration as a consequence of a drought is driven by more diverse factors and is likely to be more extensive than human movement resulting from a tsunami (Laczko & Aghazarm, 2009). Nevertheless, as Black, Kniveton, et al. (2011) note, environmental change will likely be perceived mainly as changing variability and a series of extreme weather events, be

it excessive rainfall or prolonged drought. Also, while shifts in climate take decades to be observed and are embedded in cultural and economic practices (Hulme, Dessai, Lorenzoni, & Nelson, 2009), the reactions to it most often occur when a crisis is acute.

Adaptation is an even more complex concept than vulnerability. Basically, it refers to activities designed to cope with negative consequences of climate change. As such, it carries costs, in monetary, social or human terms. The IPCC defines it as follows:

Adaptive capacity is the ability or potential of a system to respond successfully to climate variability and change, and includes adjustments in both behaviour and in resources and technologies. The presence of adaptive capacity has been shown to be a necessary condition for the design and implementation of effective adaptation strategies so as to reduce the likelihood and the magnitude of harmful outcomes resulting from climate change (Brooks & Adger, 2005). Adaptive capacity also enables sectors and institutions to take advantage of opportunities or benefits from climate change, such as a longer growing season or increased potential for tourism. (IPCC, 2007, 17.3.1)

However, often adaptation has attained a normative connotation, with explicit or implicit preferences for certain types of adaptation activities, such as infrastructural investments, technological or social innovation or capacity building (Kumamoto & Mills, 2012).

As mentioned above, one of the most important questions with regard to climate or environmental migration is the question of whether it is adaptation failure³ or, on the contrary, a successful coping mechanism with regard to the effects of climate change (thus, following the above-mentioned two paradigms respectively). One of the central theories regarding this question stems from Massey et al. (1993), who consider migration one of many strategies employed by families and communities in order to maximize income, minimize risks and secure agency in the context of expected or actual market failures. Migration can be seen as a kind of adaptation to climate change whenever it occurs in order to avoid worse consequences of climate change. However, where migration is not voluntary, it is a problematic form of adaptation. People would prefer to stay where they are.

Therefore, many adaptation programs explicitly aim at making it attractive or possible for them to stay (Martin, 2010). What turns migration into a positive adaptation strategy in this scenario are remittances, which are being sent back to the sending area in order to take pressure off of local labour markets and to create a cash flow for direct support of remaining family/community members as well as for local investments (Massey et al., 1993, p. 439). However, the extent to which migration can function as a successful coping mechanism with regard to the consequences of climate change is determined by adaptive capacity, vulnerability and exposure to risk, which are in turn strongly shaped by economic, social and cultural capital endowments of households and communities (Bardsley & Hugo, 2010; Hugo, 2013; McLeman & Smit, 2006).

Thus, migration as a form of adaptation to climate change is ambivalent. It can be the best available adaptation strategy when staying may have even worse consequences than migrating, either in extreme events or in the case of a slow-onset deterioration of livelihoods. It may also reduce competition over shrinking resources (Black, Bennett, et al., 2011). However, such a reduction of options through climate change clearly is problematic from a normative and policy point of view, since climate change is man-made. The question as to who caused the changes in livelihood opportunities and who has to make reparations for them is key and highly contentious. Moreover, there is an indirect link between migration and adaptation which has to be taken into account too:

income generation at the destination, the aim of labour migration, can potentially support adaptation measures via remittances.

3.3. Climate migration patterns

As illustrated in Figure 2, environmental stress can lead to three types of reactions, mediated by social, political, economic and cultural factors: passive acceptance, active *in situ* adaptation and migration (Hugo, 2013, p. xvi). Thus, migration is one of a series of possible responses to high vulnerability and a potential adaptation measure to the effects of climate change. Furthermore, as mentioned, climate change can affect already existing migration patterns, for example pastoralists. This discussion leads to the distinction of four types of migration patterns with particular importance when discussing climate change (Table 1).

- (1) 'Ecological-economic migrants'. Current population movements are primarily driven by livelihood strategies, labour migration. Such population movements are already frequent all over the world. They are generally selective with respect to households, meaning that only single members of a household migrate but that the decision is made by the household or group to which the migrant belongs. This kind of migration is mostly temporary, either short term (seasonal, circular) or long term (life cycle). The main driver is income; the goal is to economically diversify livelihood options for those left behind, usually via remittances. Environmental changes thus can be expected to affect such population movements, but only in relation to a multitude of other factors, particularly the effects of climate change on livelihoods in both potential sending and receiving regions. Often, investment is required for relocation and initial periods of job search.
- (2) 'Climate disaster refugees'. People can be more or less forced to move⁴ when and where living conditions have dropped below the bearable. Migration then

Table 1. Types of climate migration patterns.

Type	Distance travelled	Permanence	Agency	Economics at destination
Ecological-economic migrants	Direction and distance depending on 'risk capital' and economic opportunities	Temporary (seasonal, life cycle)	Individuals, but often group-decided, predominantly young males	Seeking to be self-supporting, primary aim: remittances
Climate disaster refugees	Short (refugee camp, relatives)	Not permanent, shorter periods of time	Groups	Dependent on external support
Permanent climate refugees	Direction and distance depending on 'risk capital', external support and economic opportunities	Permanent	Groups	Seeking to be self-supporting, tapping external support
Climate-affected migrants	Rerouting of migration patterns	Depends on conditions	Groups	Seeking to be self-supporting

generally is to the nearest location where conditions are bearable again, often where international attention and aid is available, or to places where migrants have relatives or other social relations. Climate disaster refugees generally tend to migrate back to the regions they were forced to leave as soon as conditions allow it.

- (3) 'Permanent climate refugees'. Climate-related disasters can, however, take more permanent forms, where the physical environment is vanishing or permanently becoming uninhabitable due to, for instance, climate change-induced sea level rise, as is the case in some small islands and coastal areas, or due to enduring desertification. Such displacement migration and resettlement are a last resort in cases where the changes are so extreme that remaining in place is not an option (Hugo, 2013, p. xxiv). The risk of displacement is particularly high in poor countries in which populations have not yet invested in climate change resilience measures, rendering them particularly vulnerable to the effects of climate change. However, while costly, adaptation measures are possible and already planned, even if mostly in richer countries.
- (4) 'Climate-affected migrants'. Because of the importance of natural resources such as land and water, the livelihoods of migrant populations, such as herders in parts of Africa and Asia, are particularly affected by changing environmental conditions. They may have to change their migration patterns or even be forced to give up their lifestyles.

All these options follow different time frames and depend on individual capabilities, with circular labour migration requiring a certain amount of economic prowess and being a first rather than last resort when living conditions start deteriorating. Displacement and resettlement, on the other hand, usually follow an extreme event such as floods and may happen in the course of political responses aimed at poor and marginalized populations which are not able to move by their own means (so-called trapped populations).

4. Migration and violent conflict: pathways and assumed causalities

In this section, we explore how migration may lead to violent conflict using the various types of climate-related migration identified above. Our argument is based on a general and simple theory of the roots of violent conflict, which puts perceptions, interests and identities, as manifested in societal discourse, as well as the specific conflict process at its centre.

4.1. A simple model of the origins of violent conflict

People involve themselves in, or support, violent conflict because they perceive their involvement to be right and/or necessary. However, what is perceived as right or necessary depends on a number of factors, such as personal convictions on the usefulness and appropriateness of the use of violence under certain circumstances and the perceived legitimacy of the 'cause' of violence (Figure 3).

Such convictions are embedded in the respective societal discourses about violence and its legitimate cause. We understand discourses as the flow of social knowledge through time – often within countries (overall societal discourse), but also, depending

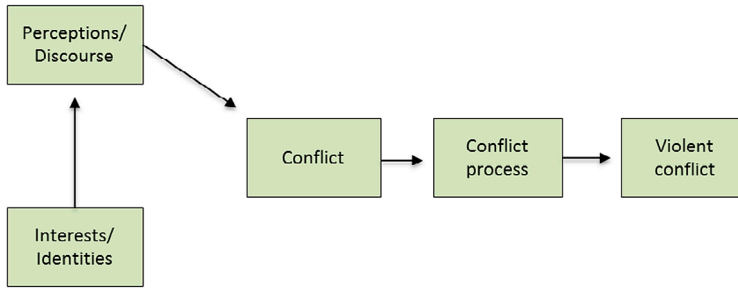


Figure 3. A simple conflict model.

on communication patterns, among smaller groups (discourse strands), such as tribal groups in traditional societies, or larger transnational groups.

Moreover, discourses and the perceptions expressed in and through them are not self-sufficient: they are both resulting from as well as actively shaping prior and present conditions, particularly interests and identities. Interest pertains to objectives of how the world should look like, while identities pertain to belonging to a particular group of people (in-group). Both interests and identities are often competitive; the latter are exclusive by definition. Both therefore lend themselves easily to conflict escalation processes. Identity conflicts and conflicts of interest are neither rare nor problematic per se; they may even help to improve the lives of individuals and groups, since conflict potentially engenders change, which is not necessarily negative. However, conflict also carries the potential to escalate into violence.

A major factor influencing the likelihood of conflict escalation is conflict salience. Conflicts over issues that are perceived as existential threats will more likely lead to violent conflict than conflict over lesser interests or minor questions of identity. However, conflicts do not become violent automatically or instantly: there is a process leading from conflict to violence. Many factors shape this process, foster it or bring it to an end. Of particular importance are general levels of social and political conflict, a society's specific conflict history, the capability of institutions to manage or solve conflicts as well as the organization of violence.

4.2. *Climate migration and violent conflict*

Migration is often seen as prone to produce violent conflict because it can create conflict over both interests and identities. As mentioned above, ideas about scarcity conflicts have been particularly prominent in the academic discussion about the links between climate change, migration and violent conflict. In the policy discourse, migration from poor to rich countries has often been depicted as a major security concern related to climate change (Adamson, 2006; Alexseev, 2006; Myers, 2005), because it potentially threatens the identity of industrialized societies.

The above differentiation of various types of climate-related migration allows a more nuanced discussion of the likelihood of violent conflict (see Table 2):

- *Eco-economic migrants.* The potential for eco-economic migration leading to armed violence is generally low, except in extreme cases where there is a particularly strong identity clash between migrants and local population. However, since

Table 2. Risk factors for violent conflict of different types of climate-related migration.

Type	Conflicts over interests	Identity conflicts	Conflict processes	Likelihood of violent conflict
Eco-economic migrants	Conflict over employment opportunities	Movements into areas with strong and adverse identities	'Otherness' discourses in receiving regions	Generally low except in regions with strong identities and 'otherness' discourses
Climate disaster refugees	Conflict over resources where they are constrained and humanitarian assistance is scarce or not forthcoming	Large-scale movement into areas occupied by hostile identity group	Climate disasters affecting groups involved in violent conflict	Low, because of widespread availability of humanitarian assistance and low capabilities to organize violence
Permanent climate refugees	Conflict over resources, employment opportunities	Movements into areas with strong and adverse identities	Discourses over economic competition and 'otherness' in receiving regions	Depending on intensity of conflicts over interests and identities
Climate-affected migrants	Conflict over resources	Conflict over identities	Dependent on absence, presence of institutions for conflict management	Depending on conflict intensity and absence, presence of institutions for conflict management

eco-economic migrants generally base their decisions whether and where to migrate on cost-benefit analyses, they will take the respective potential for mistreatment in the receiving area into account and will still choose such locations when potential benefits outweigh the expected disadvantages. A case in point is high income differentials. Thus, migration from very poor to very rich regions carry particular risks of violence where the local population is reluctant to integrate migrants into existing social and economic arrangements and institutions.

- *Climate disaster refugees.* The potential for violent conflict emanating from or being aggravated by refugees largely depends on the characteristics of the population movement (number of people, length of stay, etc.) and the conditions in the receiving regions (violent conflict, resource availability, identity issues). The likelihood of population movements resulting from climate disasters leading to violent conflict is low. One important reason is the large-scale availability of humanitarian assistance in most disaster cases, which alleviates immediate scarcities. Further, temporary disaster refugees are less likely to compete for resources such as land or employment opportunities. Finally, disaster refugees are generally not in a good position to organise violence.⁵
- *Permanent climate refugees.* The likelihood of violent conflict increases when climate-related refugees stay permanently because of the lack of opportunity to return. Conflict over scarce resources and/or employment opportunities in the new location may intensify when migrants are not perceived as temporary any more. Furthermore, in most cases, external humanitarian assistance will wither over time, thereby exacerbating conflict over resources. Nevertheless, whether permanent

refugee movements become problematic depends on a host of factors, such as the intensity of the conflict over interests and identity, and the recent history of violent conflict in the receiving region.

- *Climate-affected migrants.* Changes in migration patterns forced on non-sedentary people either directly because of environmental factors or indirectly because of sedentary peoples' reaction to environmental change are often directly influencing the livelihoods of traditional migrants. Depending on the scale of the environmental changes as well as the numbers, organization and characteristics of the non-sedentary people, this may lead to intense conflict over resources, often linked to identity clashes, for instance between herders and farmers. Such conflicts have already happened frequently in most resource-scarce areas with a high percentage of non-sedentary people, however, and often due to changes in precipitation levels unrelated to climate change. In many instances, conflict management institutions, such as councils of elders, exist to solve such conflicts. A higher frequency and intensity of adverse weather, or the erosion of the authority of conflict management institutions may, however, lead to a breakdown of such arrangements. The potential for such conflicts to turn into violent conflict increases when there is a prior history of violence or when exclusivist identity groups are armed.

4.3. Conflict-prone receiving regions

The above discussion points to the identification of three types of receiving regions where the likelihood of violent conflict resulting from in-migration – of any kind – is particularly high. These can also be framed in terms of vulnerability and adaption, which are often lumped together, as a receiving region's integration potential. Both interests, for instance over resource use or job availability, and identities can be crucial for the willingness to accept migrants. Three types or regions stand out as particularly conflict prone:

- *Regions with extreme resource scarcity.* Absolute scarcity of resources such as land or water needs to be seen in relation to population density and the availability of external assistance. Extremely resource-scarce areas are conflict-prone and therefore unlikely to be the choice of eco-economic migrants; temporary climate disaster refugees will generally benefit from external assistance. Particularly problematic from the point of view of violent conflict are permanent climate refugees as well as climate-affected migrants, who both have little choice regarding the location and little capacity to adapt to climate change other than to claim, and if necessary to fight for, scarce resources.
- *Regions with high levels of conflict.* Wherever migrants move into regions where levels of conflict over interests or identity are already high, the potential for them to become a driver, or even trigger, of violent conflict, is comparatively high. This is particularly true when migrants are shifting the balance in identity conflicts because they swell the numbers of particular identity groups.
- *Regions with exclusive identities.* Finally, mention needs to be made of migration into communities which, for whatever reasons, are unwilling to accept others. Such unwillingness is not necessarily related to actual scarcity; nevertheless, discourses in receiving regions often emphasize economic issues, such as a reduction in the standard of living, or increased competition for jobs. Furthermore,

such communities may have strong identities and fear the erosion of traditions, customs and institutions by an influx of migrants from another cultural background.

5. Conclusion

In spite of the prevalent perception of population displacement, forced migration and climate change refugees as threats in academia and public discourse, the reality of adjusting to the consequences of climate change is much more complicated. Migration is just one of numerous potential responses to global environmental change; many do not involve migration at all, but *in situ* adjustments or no adjustments whatsoever (Bardsley et al., 2010; Hugo, 2013). Critical variables are vulnerability and adaptive capacity of individuals or groups: already marginalized parts of affected populations may not be able to adapt to a changing environment and the ensuing loss of livelihood opportunities at all, while other parts of the same society may be capable of adapting successfully. As Graeme Hugo put it, ‘there are real chances that environmental influences like climate change may exacerbate existing inequalities that are found within and between communities’ (Hugo, 2013, p. xvi). Thus, it is not necessarily migration patterns or the number of migrants which enhance the probability of conflict escalation, but the inherent power relations in the respective society.

It has been shown above that the potential of climate migration to lead or contribute to violent conflict is shaped by the causes, extent, goals and consequences of the respective population movement as well as the characteristics of the receiving region, including its economic situation and the societal discourses on the necessity to integrate refugees and migrants. However, the relationship and interaction between these two elements is even more important. In order to tentatively predict the threat of violence in the wake of climate-induced population movements, it is key to understand whether and to what extent a particular population movement to a specific area may lead or contribute to conflicts over interests and/or identity in that area, and whether such conflicts feed into a process leading to violence. A host of factors, including prior conflicts, prior migration movements, the capability and willingness to organize violence and the strength of institutions to mediate conflicts influence this process. This needs to be reflected by causal models (Figure 4).

The extent and character of the conflictive power of environmentally induced population movements are thus far from established (Scheffran et al., 2012, p. 6; Warnecke, Tänzler, & Vollmer, 2010, p. 1). Both conflict and peaceful coexistence remain plausible scenarios for projections of large population movements in the wake of climate-induced environmental degradation (Warnecke et al., 2010, p. 8). In any case, the picture needs to be complicated considerably in order to be able to understand conflict escalation processes in the wake of climate-related migration movements.

Furthermore, empirical research should more clearly distinguish between various types of migration and their differing links with conflicts. Our conclusion that some types of migration may be more conflict-prone than others needs to be tested by comparing different types of migration, as well as their links to different types of local, national and international conflict. It is our understanding that the current gap between broad assumptions about the importance of migration for the relationship between climate change and conflict and empirical work on migration under environmental stress needs to be closed. Differentiating migration from the viewpoint of various forms of adaptation provides an avenue worth pursuing in further research.

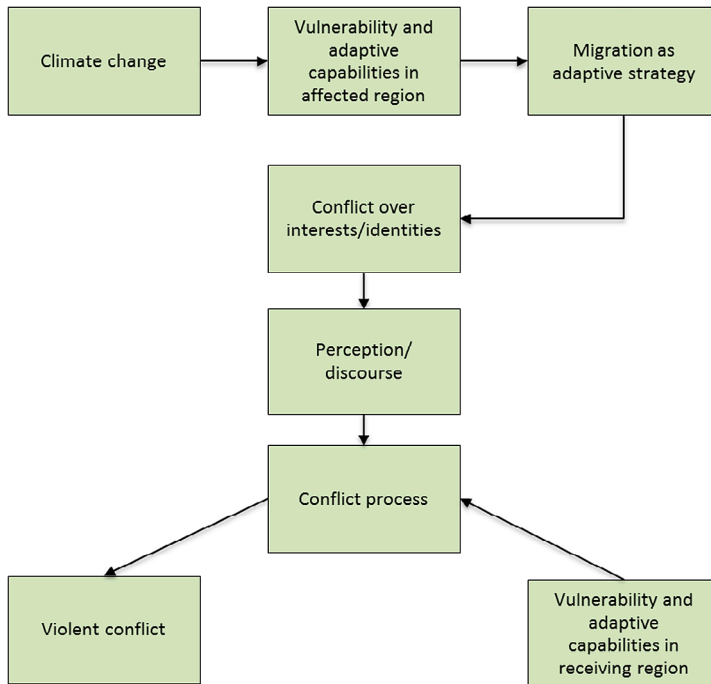


Figure 4. Adaptation and vulnerability in the context of climate migration and conflict.

Acknowledgements

The authors would like to thank Sabrina Wannewitz for her help with the graphics, Martin Halewitz for formatting the text, as well as two anonymous reviewers for their constructive and helpful comments. All mistakes are our own.

Disclosure statement

The authors have no financial interest and no benefits arising from the direct application of their research.

Funding

This work was supported by the German Research Community (DFG) under [grant DFG EXC 177].

Notes

1. In some models, an additional effect is considered. Gleditsch, Nordås, and Salehyan (2007) argue that in addition to the direct pathway, environmental stress resulting in migration movements which lead to conflict, there is an indirect pathway: environmental changes cause resource conflicts in the traditional habitat, leading to migration movements to a new region which then also experiences tensions. Thus, environmental stress can create both 'environmental refugees' and refugees in the traditional sense (Gleditsch et al., 2007, p. 4f). They assume that there are significant differences between these two refugee groups with regard to their relevance for conflict. Traditional refugees from the indirect pathway tend to import established conflict structures, weapons, resources, organizational structures and violent

ideologies from the preceding resource conflict to the receiving area, thereby heightening the risk of organized violence in their new habitat. Direct environmental migrants, on the contrary, are not usually involved in existing violent conflict, do not perceive themselves as victims of suppression and persecution, and do not aim for retaliation, since the general understanding of environmental change is as an act of nature beyond the control of any government or other group (Gleditsch et al., 2007, p. 6f). We will, in this article, focus on the direct link only.

2. Issues related to the diversity of findings on the relationship between climate change and conflict have recently been intensely debated in contributions to a number of journals including *Science*, *Nature*, *Climatic Change*, *Annals of the American Academy of Sciences* and *Political Geography*. For an introduction to the controversies see the spring 2014 issue of *Political Geography*.
3. It has been argued that in development theory and practice, there is a 'sedentary bias' (Bakewell, 2008) which generally views migration as a problem, both for migrants and society at large.
4. Black and others (Foresight, 2011) have argued, in an important study, that particularly poor populations may even be caught in a 'trap', as migration requires a minimum of resources.
5. An exception is the case of disaster refugees who are already involved in a violent conflict which they import to the receiving area.

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