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Migration, Climate Change and Social and Economic Inequalities

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Content

Kurzfassung

Die Auswirkungen des Klimawandels auf Migrationsbewegungen sind in den letzten Jahren in den Mittelpunkt wissenschaftlicher, politischer und öffentlicher Debatten gerückt. Migrationsbewegungen im Kontext des Klimawandels sind vielfältig und stehen in enger Verbindung mit sozialen, ökonomischen, politischen und anderen Aspekten. Dieses Kurzzeit-Projekt zielte darauf ab, den Forschungsstand zu möglichen Migrationsszenarien und deren Relevanz für Europa und Österreich zu erheben und relevante statistische Daten zu diesen Szenarien zu analysieren. Ein wichtiger Ansatzpunkt war dabei die Berücksichtigung von in diesem Kontext relevanten sozialen und ökonomischen Ungleichheiten.

Im Zuge der Forschungen wurde deutlich, dass die Diskussion um passende Begriffe und Konzepte, um dieses komplexe Phänomen Migration und Klimawandel zu fassen, noch immer zentral ist. Daher enthält das erste Kapitel eine kurze Präsentation der wichtigsten Aspekte in Bezug auf die kontroverse Diskussion um Begrifflichkeiten. In einem weiteren Kapitel werden die relevantesten Migrationsszenarien vorgestellt und diskutiert. Der Fokus liegt dabei auf folgende Szenarien: Migration aufgrund plötzlicher Umweltereignisse, langfristige Umweltveränderungen bei denen Migration sehr oft als Adaptionsstrategie verstanden wird, Vertreibungen aufgrund von Konflikten in Zusammenhang mit Umweltveränderungen und die Frage der sogenannten „trapped populations“. Forschungen zeigen, dass Migrationsbewegungen im Zusammenhange mit diesen Szenarien vielfältig, divers, komplex und kontextspezifisch sind und wesentlich mit der Frage von Ungleichheiten verbunden sind. Ein Großteil der Migrationsbewegungen wird nicht internationale, sondern interne Migration umfassen. Migrationsdynamiken in diesem Zusammenhang nach Europa sind noch nicht sehr gut erforscht. Es wird aber angenommen, dass es höchst unwahrscheinlich ist, dass es zu Massenmigrationsbewegungen nach Europa kommen wird. Dies ist auch auf die hohen Kosten von Migration zurückzuführen. Das heißt, viele Menschen – auch wenn sie gefährdet sind – haben einfach nicht die nötigen Mittel, um zu migrieren. Ein letzter Abschnitt beschäftigt sich mit möglichen Ansatzpunkten für Adaptionsmaßnahmen in diesem Kontext.

Abstract

The relationship between climate change and migration has received increasing scholarly, political and public attention over the last years. Climate change is associated with migration in many ways and migration responses in this context are diverse and deeply interlinked with other social, economic, political and other aspects. This short-term research project aimed at reviewing the state of research on migration scenarios in the context of climate change and their relevance for Europe and Austria, reviewing statistical data available for these scenarios and taking into consideration social, economic and political aspects and inequalities relevant in this context.

The findings reveal that there is still an ongoing discussion on terminology and concepts that are able to adequately grasp this complex phenomenon. Therefore the first section starts with briefly discussing the most important aspects in this context. In a second section, the most relevant migration scenarios are presented and discussed, with a specific focus on migration as a result of sudden-onset disasters such as storms, heavy rains and floods; long-term environmental change or degradation where migration is also understood to be an adaptation strategy; displacement caused by conflict associated with a degrading; and the issue of the so-called “trapped population”. Research showed that migration responses associated with these scenarios are multi-faceted, diverse, complex and context-specific and deeply connected with the issue of inequality. Most movement in the context of climate change will not be international migration but rather be internal movement. Migration dynamics towards Europe are still not well-understood. The last section discusses possible starting points for adaptation measures in this context.

F-1 Introduction

> Since earliest times, humanity has been on the move. Some people move in search of new economic opportunities and horizons. Others move to escape armed conflict, poverty, food insecurity, persecution, terrorism, or human rights violations and abuses. Still others do so in response to the adverse effects of climate change, natural disasters (some of which may be linked to climate change), or other environmental factors. Many move, indeed, for a combination of these reasons.
> (UN New York Declaration for Refugees and Migrations, 2016)

The interrelation between climate change and migration has attracted increasing attention during the last years. Already in 1990, in its First Assessment Report, the Intergovernmental Panel on Climate Change noted that "[m]igration and resettlement may be the most threatening short-term effects of climate change on human settlements. People may decide to migrate in any of the following cases: loss of housing […], loss of living resources […], loss of social and cultural resources […]" (IPCC, 1990: 5-9). Twenty-four years later, the IPCC dedicates a whole section on "Migration and Mobility Dimensions of Human Security" in its Fifth Assessment Report in the chapter on "Human Security" (IPCC, 2014a: 766-771) and includes subsection on migration in other chapters, for example in the Chapter on "Emergent Risks and Key Vulnerabilities":

> "[…] climate change will bear significant consequences for migration flows at particular times and places, creating risks as well as benefits for migrants and for sending and receiving regions and states […]. While the literature projecting climate-driven migration has grown recently […], there is as of yet insufficient literature to permit assessment of projected region-specific consequences of such migration." (IPCC, 2014a: 1060).

It is striking that the second quote is formulated in a more cautious way and also includes a reference to "benefits" of climate change related migration, due to the fact that there has been an extensive discussion on the relationship between climate change and migration, drawing from tremendous multi- and interdisciplinary research carried out during the last few decades. The results of this huge body of research repeatedly pointed out that the **interrelation between climate change and migration is a multi-faceted and complex phenomenon**, where **causal relationships are hard to establish and possible future developments and forecasts are difficult to project** (see, e.g., Geddes, 2015; Hugo, 2010; Kälin, 2010; Piguet, Pécoud and Guchteneire, 2011).

Yet, climate change will have an effect on the environment and, thus, also on the human being. The IPCC notes in its last report:

> "Climate change will amplify existing risks and create new risks for natural and human systems. Risks are unevenly distributed and are generally greater for disadvantaged people and communities in countries at all levels of development." (IPCC, 2014b:13)

As the quote indicates, **inequality plays a crucial role when it comes to the impact of climate change**. Climate change and its consequences such as a higher frequency of disasters are assumed to have especially severe consequences for marginalised and poor people. The social, political and economic order plays a pivotal role with regard of the actual consequences of phenomena such as climate change or natural disasters. As political stakeholders as well as researchers have pointed out: "In many cases, nature's contribution to 'natural' disasters is simply to expose the effects of deeper, structural causes – from global warming and unplanned urbanization to trade liberalization and political marginalization." (IFRC, 2001: 7) Or as Bankoff has stated: "What makes a hazard into a disaster depends primarily on the way a society is ordered. […] people are at risk not simply because they are exposed to hazards but also because they have been made marginal in some way by a combination of variables such as class, gender, age, ethnicity, or disability." (Bankoff, 2010) Thus, the **social structure of the society is crucial when analysing the effects of climate change in general and its impact and/or interrelatedness with human mobility in particular**. Climate

change is supposed to interact with social, political, economic, cultural and other factors that are important for the decision to migrate (see Black et al, 2011: 447-449).

This chapter presents the findings of the research project "Migration, Climate Change and Social and Economic Inequalities". The project started from the assumptions delineated above and focused on the **following research questions**:

- Which migration scenarios are discussed in the context of climate change from an academic perspective?
- Which migration scenarios in this regard might be relevant for Austria and Europe?
- In what ways are social, economic and political aspects and inequalities are taken into consideration when discussing about climate change related migration?
- What are gaps in research concerning migration scenarios and social and economic inequality and aspects as well as their relevance for Austria and Europe?
- What are possible starting points for adaptation measures in the field of climate change related migration (for Austria)?

In order to approach these questions the research process, firstly, was dedicated to **reviewing relevant academic literature** in the field of climate change and migration, with a specific focus on migration scenarios in general and those which are relevant for Europe and Austria in particular. The research process made clear that a) the question of finding adequate terminology in order to grasp the issue of climate change and migration is deeply interlinked with the question of different scenarios and b) that scenarios are very often quite fuzzy and not clear-cut. Furthermore, it is often not clear how and in what way they are relevant for Europe/Austria, as migration responses and patterns in the distinguished scenarios are divers, ambiguous and "highly context-specific" (IOM, 2014: 37). In addition, the scenarios are mainly referring to different (environmental) causes of movement. However, as research has demonstrated, "[f]ocusing on a single cause distorts and oversimplifies the context […]. Complex combinations of both natural and human factors that intertwine to influence the risk of future displacement call for a more holistic interpretation that includes not only triggers, but also the latent and structural factors that determine how exposed and vulnerable people are to hazards in the first place." (IDMC, 2017: 39)

Secondly, it intended to **scrutinize social and economic as well as political factors** that are discernible in these scenarios and/or integrate these social and economic scenarios. Yet, the research revealed that social, economic and political factors are not distinct for specific scenarios, they are rather discussed more or less independently from different scenarios. Thus, the discussion of social and economic inequality will not be done separately but integrated in the following discussion of different scenarios.

Thirdly, a **critical inventory, analysis and evaluation of quantitative data** in the context of climate change related migration was carried out, with a specific focus on those data that are relevant for Europe/Austria. This task was particularly challenging as there is a serious lack of data on this topic, especially when it comes to data with regard to Europe/Austria. The available data, however, is closely connected with specific scenarios and, thus, the presentation and discussion of the available data will be also included in the discussion of the scenarios in the sub-sections of this report.

Based on these preceding steps possible starting points for adaptation measures in this field were discussed. The reference to adaptation was considered on two, closely interlinked levels:

1. By focussing on economic and social inequalities and factors and political aspects that are relevant for adaptation
2. By understanding migration as a form of adaptation.

However, as will be discussed later, understanding migration as a specific form of adaptation is also deeply linked with the question of inequality. On the one hand issues of equality have

an influence if access to migration as adaptation is available in the first place, on the other hand migration as adaptation is said to have an effect on diverse aspects of inequalities (e.g. poverty reduction).

Concerning possible adaptation measures, it has to be emphasised that due to the complexity of the issue and the difficulties in understanding and capturing the problem, attempts to politically address the problem are challenging. This chapter argues that in order to tackle the problem and to provide protection for people affected it is crucial to apply a **human rights approach** and to pursue several levels of political action. That means not only that the analysis of the issue should take the guarantee of human rights as a starting point for the assessment of the problem but also that human rights should be integrated as a benchmark in all policy and legal responses. Using a human rights approach means referring to an internationally well-established normative, legal and institutional framework which has the advantage that it relies on internationally acknowledged basic norms and values but also has the potential to connect different policy fields which are relevant in this context (e.g., environmental, migration and development policies) and to define a common ground and globally accepted basis for action. In addition, taking human rights seriously in any measure concerning climate change – including adaptation – guarantees that questions of inequality are taken adequately into consideration.

The **methods** applied during the research process contained desktop research including the review and qualitative analysis of academic literature, the review and analysis of quantitative secondary data from different sources, mainly from international organisations. The analysis was guided by the research question mentioned above.

The following sections will, firstly, deal with the question of terminology as it is a fundamental issue insofar as it has legal as well as political implications. Secondly, the next section will discuss different scenarios in the context of climate change and migration and also present and discuss the data in this regard. It will furthermore analyse how these scenarios are relevant for Austria and Europe. A third concluding section will discuss why it is useful to include human rights concepts into all political measures in the context of climate-related migration and what might be appropriate policies to comprehensively address this issue and to guarantee the protection of people moving in the context of environmental and climate change.

F-2 Climate-linked induced migration as a contested concept – Outlining basic issues

Climate-induced migration is "an essentially contested concept" (White, 2011: 13), which is apparent in the ongoing debate on finding an appropriate term for this type of migration and in the political, public and academic discussions on how to "govern" this complex migration issue. The global climate regime has been very reluctant to take into account mobility in the context of climate change in its legal framework. Following the adoption of the *United Nations Framework Convention on Climate Change* (UNFCCC) in 1992 (entered into force in 1994), it took sixteen years that climate change related migration was mentioned in a *Report of the Conference of the Parties*. In Article 14(f), the 2010 *Cancun Agreement* invites states to take

> "[m]easures to enhance understanding, coordination and cooperation with regard to climate change induced displacement, migration and planned relocation, where appropriate, at the national, regional and international levels" (United Nations, 2011: Art. 14(f)).

In its 2012 *Doha Decision*, the UNFCCC Conference of the Parties states under Article 7 of the section on "Approaches to address loss and damage associated with climate change impacts in developing countries that are particularly vulnerable to the adverse effects of climate change to enhance adaptive capacity" that the Conference

> "acknowledges the further work to advance the understanding of and expertise on loss and damage, which includes, inter alia, the following: […] (vi) How impacts of climate change are affecting patterns of migration, displacement and human mobility" (United Nations, 2013: Article 7(vi)).

The 2015 *Paris Agreement* provides under Article 49 for the establishment of

> "a task force […] to develop recommendations for integrated approaches to avert, minimize and address displacement related to the adverse impacts of climate change" (United Nations, 2016b: Article 49).

At the 2016 *Marrakech Climate Conference*, the Conference of the Parties encouraged State Parties

> "to incorporate or continue to incorporate the consideration of extreme events and slow onset events, non-economic losses, displacement, migration and human mobility, and comprehensive risk management into relevant planning and action, as appropriate, and to encourage bilateral and multilateral entities to support such efforts" (United Nations, 2017: 3/CP.22, Article 9).

The passages cited above already indicate some of the many terms and concepts that are used to refer to different forms of migration in the context of climate change: displacement, migration, planned relocation or human mobility are some of the terms used to grasp the very elusive and multi-faceted phenomenon of migration in the context of climate change. Although it has been acknowledged that climate change will have increasing repercussions on migration, there is still no agreed terminology, concept and definition of migration in the context of environmental and climate change. The discussion is complicated by the fact that it is not a new phenomenon that people move in the context of environmental threats; instead, environmental hazards have always been closely connected with the movement of people, e.g., desertification or droughts (see Hugo, 2010: 9; Leighton, 2011: 331-340; Piguet, Pécoud and Guchteneire, 2011: 2)

Environmental change can be associated with a broad variety of different migration patterns, it "can be a response to various sudden or slow-onset changes, may comprise movements over short or long distances and periods, and may involve small groups or entire communities" (Barnett and Webber, 2010: 37). Furthermore, the complexity of the subject is exacerbated by an intricate relationship between environment, resources, development and migration (Hugo, 2010: 10-11).

Renaud et al. (2007: 29) differentiate between environmentally motivated migrants, environmentally forced migrants and environmental "refugees". The latter term, however, is highly contested meanwhile – as will be explained later on – and rejected by most academic authors, international organisations[1] as well as people affected (see, for example, McAdam and Loughry, 2012: 379-388). According to Renaud et al an "environmentally motivated migrant" may choose to move temporarily or permanently, his/her decision may be influenced by the fact of environmental change but not necessarily being identified as the primary cause. Socio-economic factors – very often interlinked with environmental factors – may also play an important role concerning the decision to migrate. This form of movement is often also associated with the notion of migration as adaptation. It emphasises that "migration can contribute positively to adaptation to climate change, notably through the way it can build financial, social and human capital" (Barnett and Webber, 2010: 38).

Hugo (2010) distinguishes between four forms of environmental migration: labour migrants, people displaced by extreme events, people permanently displaced and community resettlements (Hugo, 2010: 46-54). Labour migrants may either move temporarily, permanently or repeatedly (circular migration) in order to generate an income and to support their relatives and family in the country of origin. Especially temporary and circular migration are widely discussed in this regard. The EMN defines temporary migration as "migration for a specific motivation and/or purpose with the intention that, afterwards, there will be a return to country of origin or onward movement." (EMN, 2011: 15) Circular migration is determined as "a repetition of legal migration by the same person between two or more countries" (Ibid.). The other three categories are to a lesser extent definable in terms of adaptation strategies but rather forced movements. However, the classification by Renaud et al (2007, 2011) solely focuses on the individual level whereas Hugo (2010) also mentions community resettlements. In regard to migration as adaptation Hugo labels this group as labour migrants, therefore indicating that environmental causes may be one incentive to migrate amongst others.

The International Organisation for Migration (IOM) defines environmental migrants as "those persons or groups of persons who, for compelling reasons of sudden or progressive changes in the environment that adversely affect their lives or living conditions, are obliged to leave their habitual homes, or choose to do so, either temporarily or permanently, and who move either within their country or abroad." (IOM, 2007: 1-2) The IOM, however, stresses that this is a working definition that attempts to grasp the complexity of the issue at hand. In cases an emphasis on the forced nature of a movement is needed, the IOM refers to the term environmentally displaced person (IOM, 2014: 22)

These remarks already indicate another issue that is discussed in this context, also because it has legal implications: Some terms, such as climate-induced or environment-related migration, suggest rather "voluntary" forms of movement while others, such as climate- or environmentally displaced persons, indicate forced migration. The main focus of the public and political debate has concentrated on the issue of forced migration as a response to climate change, thus, it is important to emphasise that not all migration in relation to environmental deterioration is displacement migration. Migration in relation to environmental change is rather taking place on a continuum between forced and voluntary migration, although the "line between movement that is 'voluntary' and 'forced' is also very blurred, and people's decisions will involve a delicate mix of both elements in different proportions" (McAdam, 2010: 2). Most authors emphasise the importance of distinguishing between these two poles (Barnett and Webber, 2010: 1).[2]

[1] For example the IOM states: "[…] a consensus not to employ terms related to the refugee regime – such as climate refugee or environmental refugee – is emerging among key stakeholders, including the Office of the United Nations High Commissioner for Refugees (UNHCR)." (IOM, 2014: 21)

[2] Despite these difficulties in making a clear distinction between voluntary and forced forms of migration, from a legal point a differentiation between forced and voluntary forms is necessary as stated by Walter Kälin: 'because of its binary, bipolar nature, law must always draw clear lines, and must therefore necessarily qualify movement as either voluntary or forced' (Kälin, 2010: 95-96) i.e. depending on

Thus, normally a basic differentiation is made between "mobility as a strategy for adapting to the impacts, and as displacement when environmental deterioration becomes so extreme that people are forced to leave an area" (Hugo, 2010: 13). However, there is some disagreement if migration as an adaptation strategy only refers to voluntary movements. McLeman and Smit (2006: 37) argue that in the case of low-lying small island states in the South Pacific migration may become "the *only* adaptive option" if the sea level rises as expected. This means they define forced migration also as a form of adaptation.

As indicated before, the term "climate refugee" is highly contested as it refers to a legal concept defined by international law which does not include environmental reasons. According to the Geneva Refugee Convention (1951) refugees by definition have crossed an international border and must be persecuted for specific reasons (such as race, religion, nationality, membership of a particular social group or political opinion).[3] Similar as the IOM, the so-called Nanson Initiative[4] also recommends not to use the term, arguing: "The terms 'climate refugees' and 'environmental refugee' should be avoided, as they are legally inaccurate and misleading." (Wahlström, 2011: 4).

In figure 1 Kälin (2010: 97) outlines the differences between the legal concept of a refugee and persons, displaced by natural events:

whether a movement is qualified as voluntary or forced, different legal frameworks are applicable (and different actors responsible).

[3] Article 1 of the 1951 Convention relating to the Status of Refugees and its 1967 Protocol:

For the purposes of the present Convention, the term "refugee" shall apply to any person who:

(…) owing to well-founded fear of being persecuted for reasons of race, religion, nationality, membership of a particular social group or political opinion, is outside the country of his nationality and is unable or, owing to such fear, is unwilling to avail himself of the protection of that country; or who, not having a nationality and being outside the country of his former habitual residence as a result of such events, is unable or, owing to such fear, is unwilling to return to it.

[4] The Nansen Initiative is a bottom-up, state-led consultative process with multi-stakeholder involvement that pursues the objective to find solutions for people who are displaced because of disasters. The Initiative writes on its homepage "'Climate Refugee' is often being used in the media to define a person displaced in the context of disasters like droughts, sea level rise as well as extreme weather events like hurricanes, tsunamis or earthquakes. This concept does not exist in international law and is not endorsed by the Nansen Initiative." (see https://www.nanseninitiative.org/secretariat/, accessed on 31 May 2017)

Refugee as person in need of international protection.	*Person displaced across borders by the effects of climate change as person in need of international protection.*
Outside the country of origin or habitual residence.	Outside the country of origin or habitual residence.
Persecution, ie danger to life, limb or liberty, on account of race, religion, nationality, membership of a particular social group or political opinion.	Danger to life, limb or health as a consequence of the effects of climate change or the nature of the response, or the lack thereof, by competent authorities in the country of origin or habitual residence.
Unable or unwilling to avail oneself of the protection of the country of origin or habitual residence.	Unable or unwilling to avail oneself of the assistance and protection of the country of origin or habitual residence.

Figure 1 Comparison of refugees and persons displaced by climate change. Figure taken from Kälin (2010: 97)

In addition, terms such as “climate-migrants” or “climate-refugees” have been criticized for “implying a monocausal relationship between environmental factors and human mobility” (Piguet, Pécoud and de Guchteneire, 2011: 17, see also IOM, 2014: 21) and, thus, neglecting the multi-causal nature of the issue. Although the debate on terminology used in the context of climate change and migration is complex and challenging, the search for an adequate terminology is not trivial as the choice of concepts and definitions has academic, political and legal implications.

Displacement is frequently mentioned as a migration response to a changing climate. A widely accepted definition of displacement was laid down by the *Guiding Principles of Internal Displacement*, however only referring to forced movement within State borders. This definition is highly relevant in the context of climate change and migration, as there is a common understanding that most movements in the context of climate change will be internal (forced or more or less voluntary) migration:

> For the purposes of these Principles, internally displaced persons are persons or groups of persons who have been forced or obliged to flee or to leave their homes or places of habitual residence, in particular as a result of or in order to avoid the effects of armed conflict, situations of generalized violence, violations of human rights or natural or human-made disasters, and who have not crossed an internationally recognized State border. (United Nations, 2004: Introduction and Scope, Article 1)

Understanding migration as a form of adaptation refers to the fact that migration might be a strategy to adjust to environmental changes in order to reduce vulnerabilities or enhance the resilience of a community, of certain groups or families, for example, through remittances sent back to the people staying behind. Thus, migration can contribute positively to strengthening the adaptive capacities of the population or families in the countries of origin. “Migration may be the most effective way to allow people to diversify income and build resilience where environmental change threatens livelihoods” (Black, Bennett, Thomas and Beddington, 2011: 448).

The legal protection of people moving in the context of climate change is generally diagnosed to be inadequate. There is no legal instrument that “defines or offers direct, clear and relevant protection” to people moving in the context of climate change (Cournil, 2011: 364). Especially when it comes to displacement across international borders there is a serious “protection gap”. The Nansen Initiation that was mentioned above has been dedicated to address this issue and to find policy solutions especially for people displaced by natural disasters.

F-3Migration Scenarios

As already indicated environmental hazards have always constituted a reason for people to move. However, climate change will presumably intensify environmental threats. The Climate Change, Environment and Migration Alliance states:

> Climate change is likely to exacerbate (a) the frequency and intensity of extreme weather events (e.g. tropical storms, floods, heat waves) (b) gradual processes of environmental degradation (e.g. desertification, soil and coastal erosion). These effects of climate change as well as its adverse consequences for livelihoods, public health, food security, and water availability will have a major impact on human mobility, likely leading to a substantial rise in its scale. (CCEMA, 2010: 1)

Also the IPCC stresses that the human influence on the climate system is evident, the anthropogenic emissions of greenhouse gases are the highest in history and the warming of the system is unequivocal und unprecedented over decades to millennia (IPCC, 2014b: 40). The observed impacts attributed to climate change include:

- Changing precipitation or melting snow and ice are altering hydrological systems, having a qualitative and quantitative effect on water resources
- Negative impacts on crop yields
- Changes in extreme weather and climate events
- Decrease in the number of cold days and nights and increase in the number of warm days and nights
- Increase in heavy precipitation events
- Increase in extreme sea levels
- Impacts from climate-related extremes such as heat waves, droughts, floods, cyclones and wildfires on some ecosystems and many human systems
- Direct and insured losses from weather-related disasters have increased substantially in recent decades (IPCC, 2014b: 49-53).

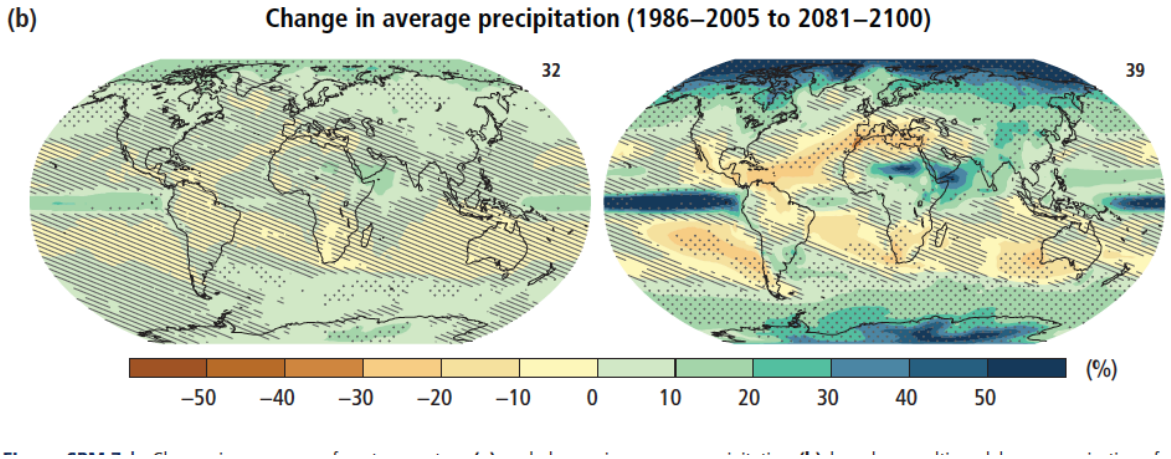

Figure 2 Source: Intergovernmental Panel on Climate Change (IPCC): Climate Change 2014, Synthesis Report

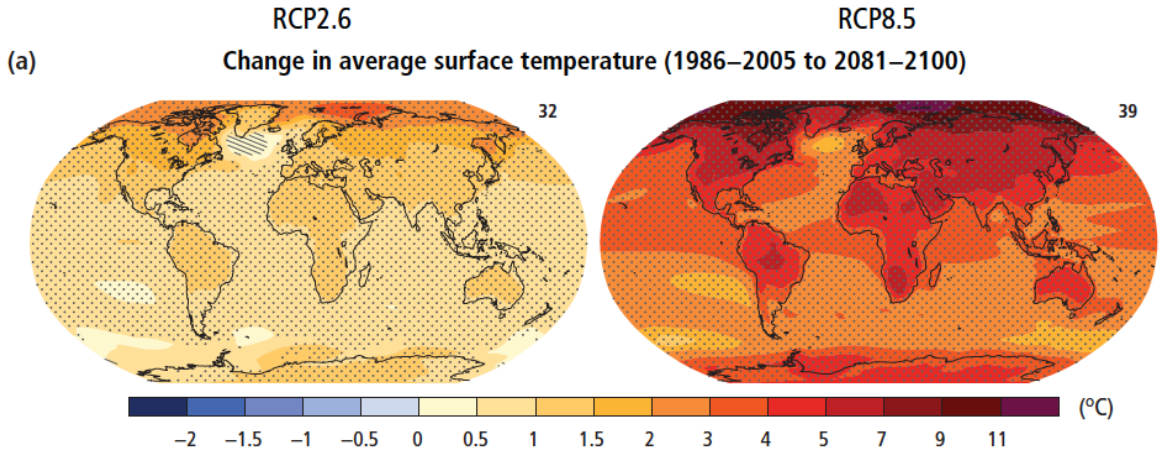

Figure 3 Source: Intergovernmental Panel on Climate Change (IPCC): Climate Change 2014, Synthesis Report

Concerning its impact on migration, the main climate change relevant changes are considered to be temperature change, reduction in meltwater that will put pressure on water resources, changes in precipitation patterns, rising sea levels and changes in the frequency and intensity of hurricanes (Rebetez, 2010: 38-44).

They are specific **migration scenarios** that are discussed in the context of climate change. These scenarios are to a large extent associated with the specific "cause" of migration such as the nature of disasters. The following scenarios are discussed in the literature to be of importance:

a) The most striking category constitutes migration with regard to **sudden-onset disasters**, also subsumed under extreme weather events, including tropical cyclones, heavy rains and floods. The effect of sudden-onset disasters on migration such as displacement is widely acknowledged and discussed as one of the most obvious and explicit scenarios in the context of climate change (see, inter alia, CARE Danmark, 2016: 15; IPCC, 2014a: 767-768; Kälin, 2010: 85; Lonergan, 2012: 61; Piquet, Pécoud and de Guchteneire, 2011: 6-7).

b) **Long-term environmental change** or **slow-onset environmental degradation** caused, for example, by droughts and desertification, rising sea levels, increased salinization of groundwater. This category is frequently considered to be an increasingly important factor in the context of migration (see, inter alia, CARE Danmark, 13; 2016: IDMC, 2016: 50-57; IPCC, 2014a: 768-770; Kälin, 2010: 85; Piquet, Pécoud and de Guchteneire, 2011: 8-10). A specific type of long-term environmental change, which is frequently conceptualised as being a scenario of its own (see Kälin, 2010: 85), is the issue of **sinking small islands and low-lying coastlines** (see, inter alia, Campbell, 2010: 57-80; CARE Danmar, 2016: 17; Oliver-Smith, 2010: 160-187). The concept of **migration as adaptation** is of closely connected with this scenario.

c) **Evacuations, resettlement or eviction** of people living at high-risk lands by governments: Governments may decide that some areas are dangerous for settlement because of environmental threats. "[…] people may (either with consent or against their will) be evacuated and displaced from their lands or, if they have already left, be prohibited from returning, or be relocated to safe areas." (Kälin, 2010: 85).

d) **Displacement caused by conflict** and disturbance of public order, violence or armed conflict that are associated with a degrading environment or related to conflict on decreasing resources (see Burrows and Kinney, 2016; CARE Danmark, 2016: 19; IPCC, 2014a: 771-775; Kälin, 2010: 85; Lonergan, 2012: 62).

e) **Displacement, resettlement or eviction by climate change measure**s: Not only climate change related weather events may lead to migration also measures under

the UNFCCC framework (such as adaptation or mitigation measures) may cause different forms of forced and voluntary migration responses. These very often problematic movements are usually closely related to development-induced displacement/migration, such as displacement or resettlement by dam projects (see Ammer et al, 2016; Lonergan, 2012: 62; Vigil, 2015).

f) **Trapped-population**: The issue of "trapped populations" refers to people who cannot move although the environment is deteriorating and becoming a serious threat because they don't have the means to do so. Migration needs financial and social resources and people who do not "possess the assets to migrate will be trapped in increasingly precarious environments" (Geddes 2015: 486).

The following sub-sections will concentrate on the scenarios of sudden-onset events, long-term environmental degradation, displacement caused by conflict and disturbance of public order and it will also address the issue of trapped population.

The sub-sections will be complemented by a discussion of quantitative data that is relevant for the respective scenario and discuss, whenever adequate, how social and economic inequalities are relevant in this scenarios. As already indicated, despite growing scientific evidence that climate change will have severe consequences for human beings and "[t]he impact of environmental change on migration will increase in the future", the question of how many people are likely to move is very difficult to answer (see, e.g., Brown, 2008; Martin, 2015). Initially, there were huge numbers circulating on how many people will migrate or will be displaced due to various impacts of climate change. Recently, the estimates are very cautious or have completely vanished because it has become clear that the interrelation between climate and environmental change and migration is quite complicated and very often the impact on migration is indirect. In addition, different regions of the world will be affected in different ways depending on factors such as exposure, wealth, population density and others. In 2014, in its fifth assessment report, the Intergovernmental Panel on Climate Change noted that "[c]limate change over the 21st century is projected to increase displacement of people […]. […] Changes in migration patterns can be responses to both extreme weather events and longer-term climate variability and change, and migration can also be an effective adaptation strategy. There is *low confidence in quantitative projection of changes in mobility, due to its complex, multicausal nature*" (IPCC, 2014a: 73, emphasis by M.M.).

However, before discussing the scenarios in detail there is the need for clarifying the question of exposure and its place in the multi-dimensional conceptualisation of climate change related forms of migration as well as some basic concepts such as vulnerability and resilience. The concept of adaptation, which is also a crucial concept in this context will be discussed later on in the sub-section on migration as adaptation.

F-3.1.1.1 Exposure, vulnerabilities and resilience

In popular scientific and political debate, exposure to natural hazards is often discussed to be one of the most important or even the only aspect that "triggers" migration in the context of climate change. However, it has to be emphasised that the factor of *exposure* considered in isolation is not conclusive when it comes to analysing the impacts of climate change on human societies in general and with regard to answering the question of migration dynamics in the context of climate change in particular.

Also the IPCC stresses the interlinkages and the various factors that are important to consider when analysing the impact of climate change. For example, when it comes to exposure of certain regions and continents such as Asia and Africa the IPCC highlights the diverse interlinkages and impacts of climate change. With regard to Asia, the IPCC mentions that:

> "Extreme climate events will have an increasing impact on human health security, livelihoods, and poverty, with the type and magnitude of impact varying across Asia […]. More frequent and intense heat waves in Asia will increase mortality and morbidity in vulnerable groups. Increases in heavy rain and temperature will increase the risk of diarrheal diseases, dengue fever, and malaria. Increases in floods and droughts

> will exacerbate rural poverty in parts of Asia as a result of negative impacts on the rice crop and resulting increases in food prices and the cost of living." (IPCC 2014a: 1331)

Africa is identified to be "one of the most vulnerable continents due to its high exposure and low adaptive capacity" by the IPCC (2014a: 1205). However, also with regard to Africa the IPCC highlights: "Climate change will interact with non-climate drivers and stressors to exacerbate vulnerability of agricultural systems […]. […] Many of the interacting social, demographic, and economic drivers of observed urbanization and migration in Africa are sensitive to climate change impacts." (IPCC, 2014a: 1203-1204) Thus, the IPCC very clearly and repeatedly stresses throughout its report that the impact of climate change on the human being and society is complex and interlinked with many other factors.

The IPCC quote also indicates an important concept which is frequently used to refer to different degrees of susceptibilities: the concept of vulnerability. The concept of vulnerability is generally seen as an important analytical tool for grasping the complex interrelation between social and natural systems which not only provides the context for responding to the effects of climate change but also the decision to migrate. The IPCC has defined vulnerability as "the degree to which a system is susceptible to, and unable to cope with, adverse effects of climate change, including climate variability and extremes. Vulnerability is a function of the character, magnitude, and rate of climate change and variation to which a system is exposed, its sensitivity, and its adaptive capacity" (IPCC, 2008: 883). Vulnerability has been widely used in the field of climate change. Initially the concept was quite narrowly defined neglecting social, economic and political issues. Meanwhile, the concept has been considerably broadened as researchers realised that most of the issues that make an individual person, a community, a region or a state susceptible to negative effects of climate changes are factors such as poverty, discrimination and political hardships or other socio-economic characteristics described in the following quote:

> "Our analysis also point out the importance of the socio-economic characteristics of the origin country (such as the level of development and the vulnerability of the agricultural sector) in shaping the nexus between climate shocks and international migration flows. In general, countries with a lower level of development and a relatively larger agricultural sector are more sensitive to climate shocks." (Coniglio and Pesce, 2015: 436)

However, not only the economic condition of a country or a region or local context is important concerning its vulnerabilities. Meanwhile there has been a growing recognition that the concept of vulnerability has to be defined much broader and take into consideration other social dimensions such as gender, age or race and diverse forms of inequalities associated with these dimensions. In doing so, Oliver-Smith (2010) has formulated a much broader concept of vulnerability that indicates the multifaceted dimensions of this concept and its relation to the (natural) environment:

> "The specific dimensions of social, economic and political vulnerability are related to inequalities, to gender relations, economic patterns and ethnic or racial divisions. Vulnerability thus, explicitly links environmental issues, such as hazards, with the structure and organization of society, and the rights associated with membership." (Oliver-Smith, 2010: 161)

Also the IPCC has taken these theoretical developments into account and has broadened its definition. In doing so, in its last report it has defined vulnerability as follows: "The propensity of predisposition to be adversely affected. Vulnerability encompasses a variety of concepts and elements including sensitivity or susceptibility to harm and lack of capacity to cope and adapt. A broad set of factors such as wealth, social status, and gender determine vulnerability and exposure to climate-related risk." (IPCC, 2014a: 1039)

Two other concepts that are important in this context are the concepts of adaptation and resilience. The definition of adaptation will be discussed later as it is frequently associated with the idea of migration as an adaptation strategy. The concept of resilience is often conceptual-

ised as being closely related to the notion of vulnerability. The IPCC understands resilience as

> The capacity of social, economic, and environmental systems to cope with a hazardous event or trend or disturbance, responding or reorganizing in ways that maintain their essential function, identity, and structure, while also maintaining the capacity for adaptation, learning, and transformation. (IPCC, 2014a: 1772)

In contrast to vulnerability, which is usually defined in negative terms as the lack of the ability to cope with adverse effects of environmental change, resilience can be understood as the positive "counterpart" to vulnerability, as it refers to the capacity to adjust to changes or the ability to recover after adverse events. Inequalities also play a decisive role with regard to the capacity to be resilient: "Poor households often have low resilience to loss due to a lack of savings, reserves or insurance. However social factors such as extended families and community networks increase resilience." (United Nations International Strategy for Disaster Reduction Secretariat, 2009: 6)

The complex dimensions, dynamics and interlinkages of vulnerabilities, resilience and adaptive capacities make it very difficult to conclude from exposure to climate change to its impact on migration and the initial high estimates of people moving in the context of climate and environmental change that very often were based on mono-causal calculations were widely criticised and rejected by migration researchers. As Kathleen Newland states in relation to such high estimates:

> Such estimates […] usually come from climate-change experts; the higher figures are regarded by serious observers as more useful for advocacy than analysis. There has been little interaction between specialists on climate change and those on migration. As a result, most calculations of climate-induced migration are mechanistic: if they assume a sea-level rise of one meter, for example, the knowledge that 100 million people live no more than one meter above sea level generates the conclusion that 100 million people will be displaced. No allowance is made for adaptation to changes, or for the ability of governments (and a few other major actors) to influence the pattern of migration flows induced by climate change. Nor is it emphasized that most migration related to climate change is likely to take place within rather than across national borders. (Newland, 2011: 2)

Thus, migration researchers suggest to take into account more complex and comprehensive models of migration dynamics. It is assumed that many interlinked and multi-faceted "drivers" influence migration as the renowned Diagram from the so-called Foresight (2011) report suggests:

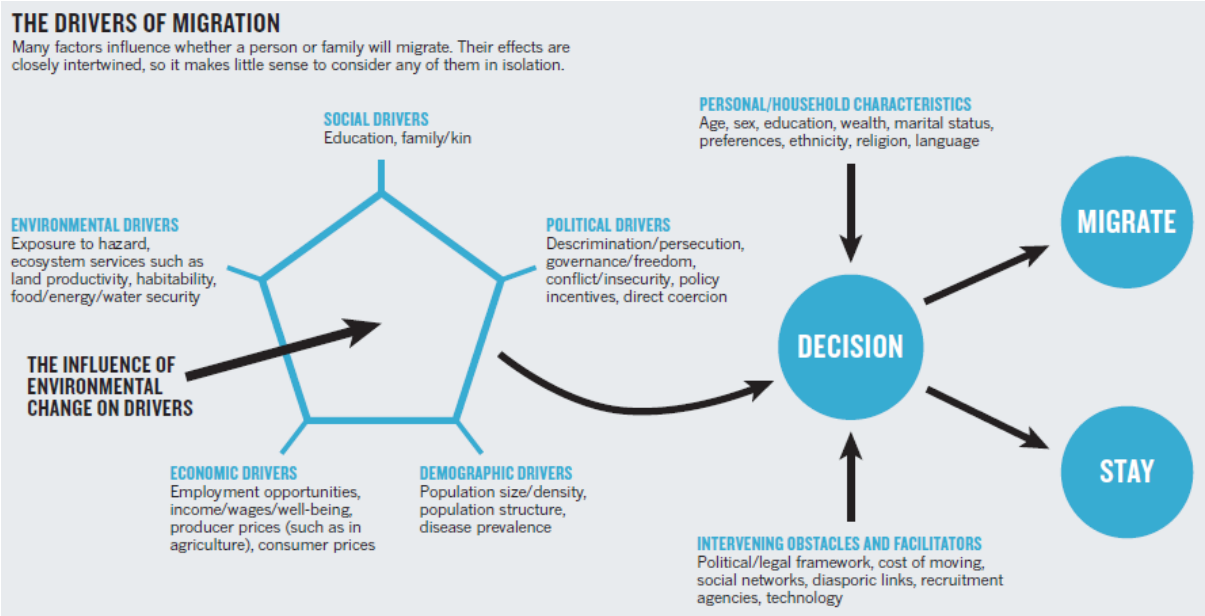

Figure 4 Taken from Black, Bennett, Thomas and Beddington (2011: 448)

Exposure to hazards is seen as one aspect subsumed under the heading of environmental drivers that might influence the decision to move. Environmental drivers are considered only one set of drivers next to social, political, economic and demographic drivers[5] that might be impacted by climate/environmental change. Thus, although there seems to be a consensus that environmental and climate change has and will have an impact on migration decisions the actual interlinkage between climate change and migration will very often be an indirect one, that means, environmental and climate change might have an impact on various drivers that are important for the decision to migrate. In addition, "the presence of a potential migration driver does not mean that a person will migrate. […] social, physical, and financial resources facilitate or militate against movement while gender and other forms of social inequality can affect migration." (Geddes, 2015. 481)

Hence, although there are possible migration scenarios discernible, there are no serious estimates available on how many people will have to move in the future. In the last sub-section of this chapter there will be a critical examination what factors and dimensions are important when it comes to the question of how many people, wherefrom and whereto are they migrating and how and in what way these scenarios might be of relevance for Europe/Austria.

F-3.1.2 Sudden-onset events

Extreme events such as tropical cyclones, heavy rains and floods are very often associated with a clear link to displacement. However, evidence suggests that migration patterns after extreme events may also be quite diverse and multi-faceted. They very often cause short-term internal displacement and movement as "most displaced people attempt to return to their original residence and rebuild as soon as practical." (IPCC, 2014: 767) Extreme events may also lead to displacement over a longer period of time ("protracted" displacement) due to inhabitability of houses and settlements as a result of a disaster. In addition, extreme events not only cause people to move away it may also lead also lead to an influx of migrants as the reconstruction of houses and infrastructure may require additional workers (Ibid.). However, as migration is costly and requires resources, it may also reduce the opportunity to migrate.

According to estimates of the International Displacement Monitoring Center (IDMC) more than 19.3 million people were displaced by natural disasters in 100 countries in 2014 (IDMC,

[5] For a discussion of the various drivers see Black, Adger, Arnell, Dercon, Geddes and Thomas (2011).

2015: 19), 19.2 million people in 113 countries in 2015 (IDMC, 2016: 14) and 24.2 million people in 118 countries in 2016 (IDMC, 2017: 31).

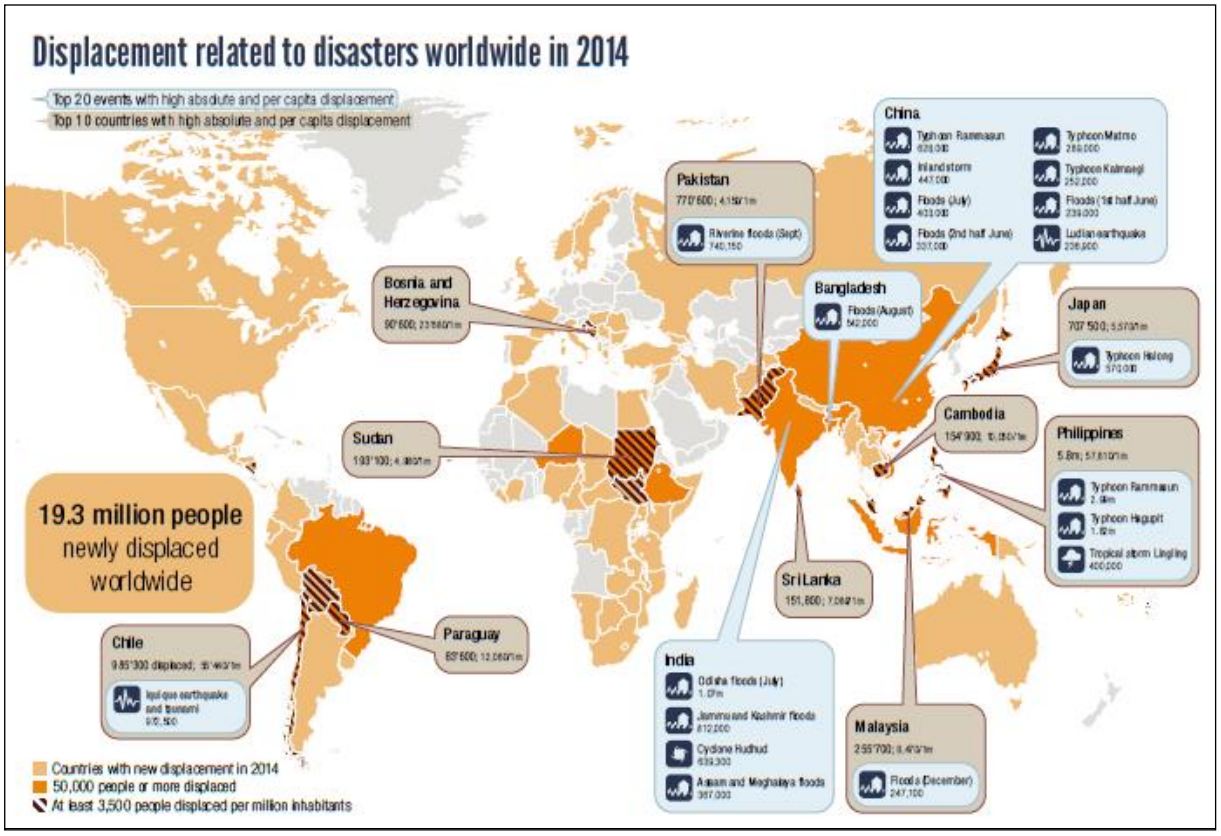

Figure 5 Displacement related disasters worldwide in 2014, Graph taken from IDMC (2014)

At an average, 22.5 million people have been displaced each year as a result of climate or weather-related disasters from 2008 till 2014 – that is equivalent to 62,000 people every day (IDMC, 2015: 8). When it comes to historical trends, the IDMC says that reviewing data from 1970 to 2014 suggests that "the likelihood of being displaced by a disaster today is 60 per-cent higher than it was four decades ago" (IDMC, 2015: 8). In 2014, disasters caused by natural hazards resulted in twice as many new displacements as conflict and violence; in 2015, there were even more than double people displaced by disaster than by conflict and violence, and in 2016, displacements after sudden-onset natural disasters outnumbered dis-placement resulting from conflict by more than three to one (IDMC, 2017: 31). From 2008 to 2015, about 203.4 Million people were displaced as a result of natural (weather-related as well as geophysical) disasters that is an average of 21.5 million per year due to weather-related events (IDMC 2016: 14). Taking into account the year 2016, a year with considerable more displacements related to natural disasters, the average number rises to 25.4 million persons per year (2008-2016) (IDMC 2017: 31). As figure 6 shows, the majority of natural disasters are climate and weather related hazards. In 2016, 23.5 million people, or 97 per cent of displacements associated with national disasters, were climate or weather related events.

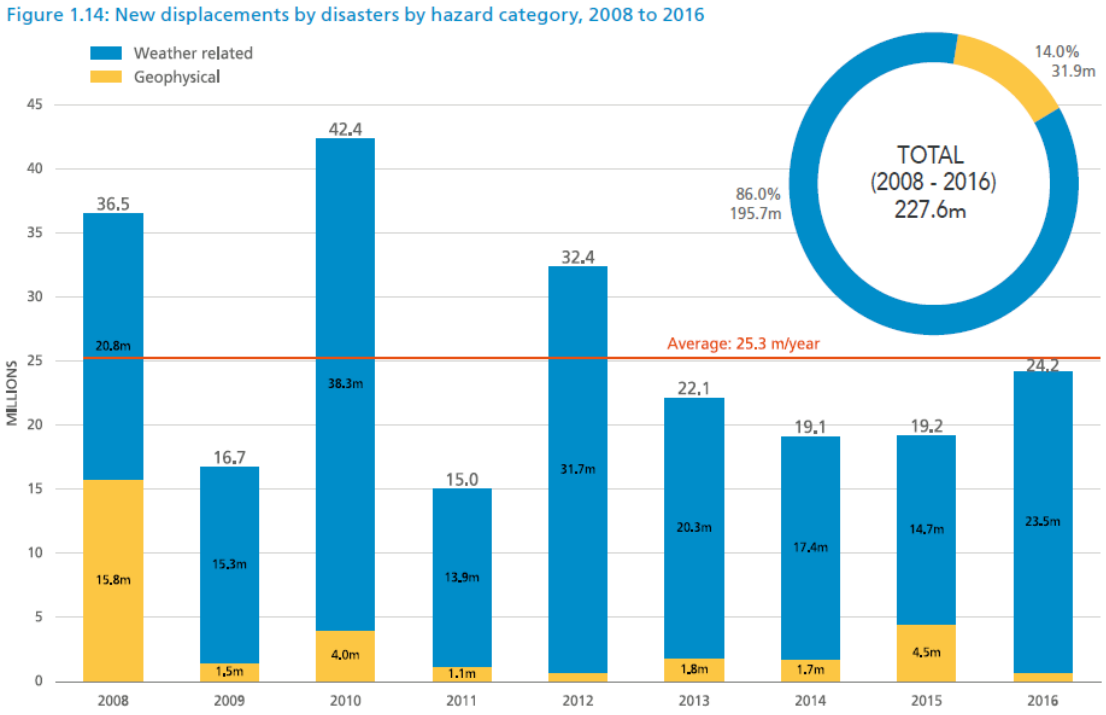

Figure 6 Annual new displacements, Figure taken from IDMC (2017: 32)

Due to the size of its population Asia is the continent most affected by various forms of disas-ter. The IDMC estimated that in 2014, "16.7 million people were forced to flee their homes, accounting for 87 per cent of the global total […]. The region was also disproportionately af-fected relative to its population size" (2015: 30; see also IPCC, 2014a: 1346). China, India and the Philippines were the worst affected countries worldwide in 2014. They not only had to cope with the highest number of displaced people in 2014 and during the period between 2008 and 2014 but also suffered from 15 of the 20 largest events in 2014 (Ibid.: 36). Floods and storms constituted a significant part of these events. In 2015, again South and East Asian regions were most effected regions with India, Myanmar and China accounting for the highest number of people displaced by weather-related disasters.

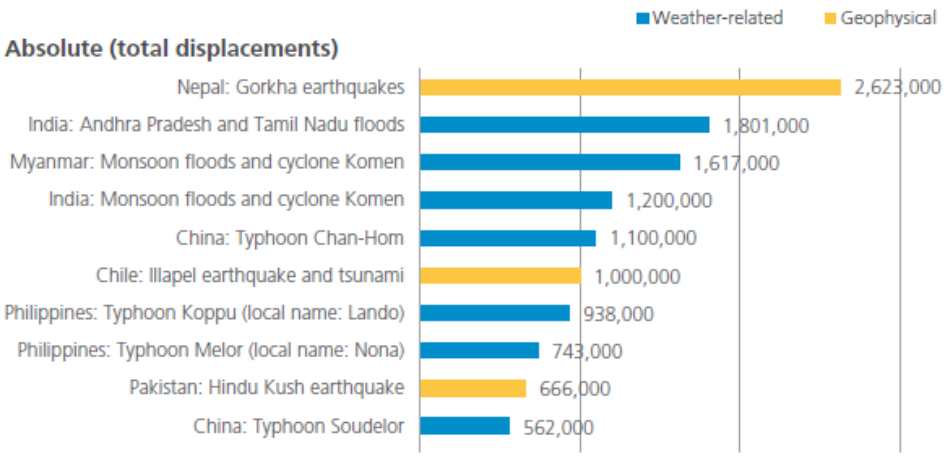

Figure 7 Absolute numbers of displacements due to disasters by countries most affected in 2015 (Figure taken from IDMC 2016: 21)

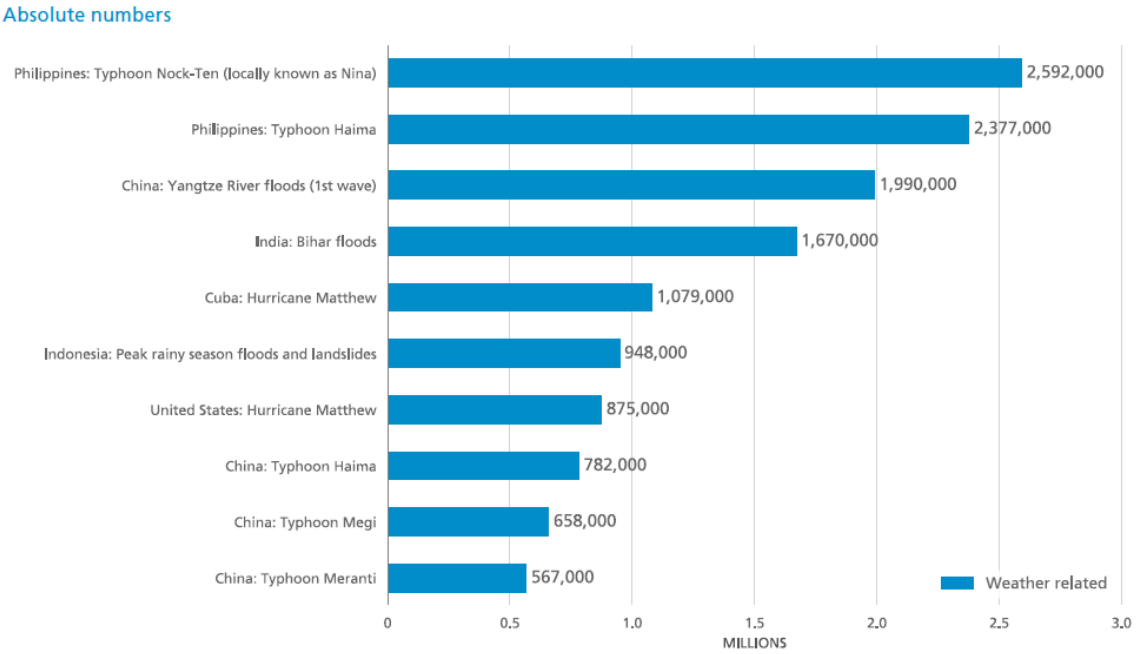

Figure 8 The ten largest disaster displacement events of 2016/Absolute numbers (Figure taken from IDMC 2017: 33)

In 2014, in Europe 190,000 people were displaced by natural disasters that is twice as much as the average number of displacements due to conflict during the years from 2008 until 2014. Compared to other regions, displacement due to natural hazards in Europe was less than 1 per cent of the global figure in 2014 (IDMC 2015: 30). In 2015, the regions of Europe and Central Asia, North America, Middle East and North Africa together accounted for only about 1 per cent of displacement associated with disaster (see graph below). In Africa, displacements due to a disaster was three times lower than the average level in the seven years prior to 2014, “but many African countries experienced high levels relative to their population size” (IDMC 2015: 29) Although in 2015 also Africa, the Americas and Europe were affected by new displacements due to disasters the regions most effected are East Asia and the Pacific and South Asia.

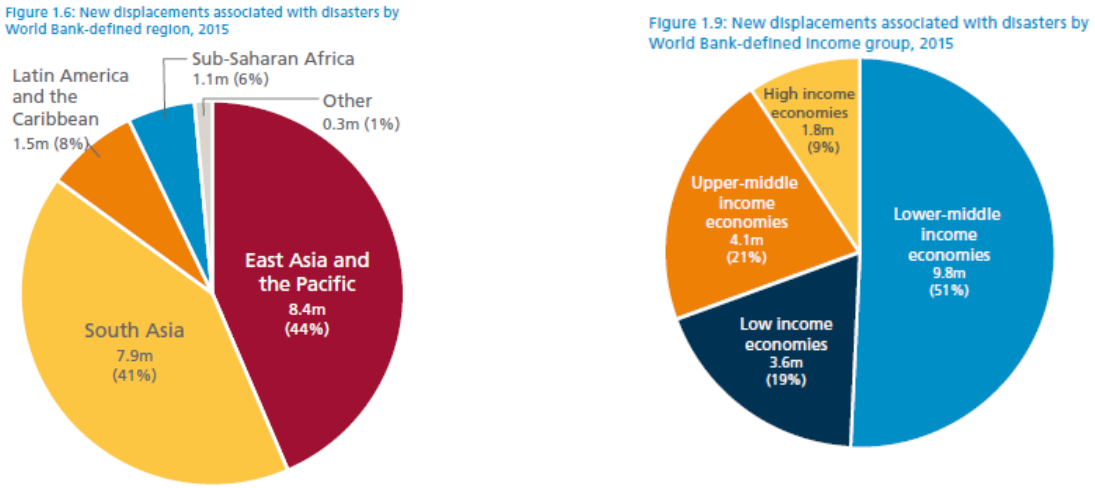

Figure 9 Taken from IDMC (2016: 15 and 19)

The second graph in figure 5 shows that the majorities of displacement in previous years are borne by development countries.

In 2016, again East Asia and the Pacific bear the brunt of new displacements by disasters (see figure 8) with the number of natural disaster-associated displacements considerably increasing in this region (16.4 million people). Second again, although the number decreasing in 2016, is South Asia (3.6 million displaced persons), followed by Latin America and the Caribbean (1.8 million displaced people) and North America (1.2 million displaced people). In Europe and Central Asia 0.1 million people (0.2 per cent of the total number) were displaced by natural disasters in 2016 (IDMC, 2017: 37).

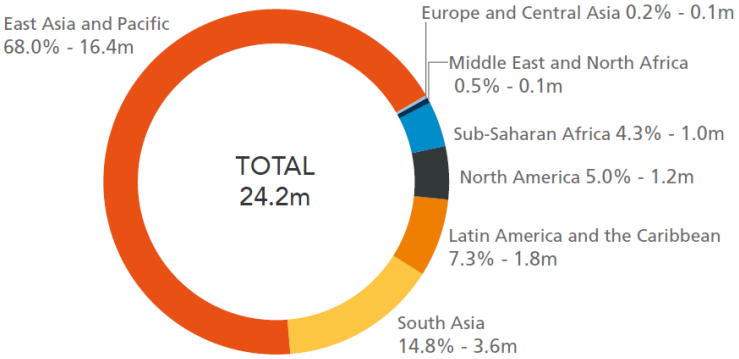

Figure 10 New displacements by disasters by region, 2016 (Figure taken from IDMC, 2017: 37).

However, it has to be stressed that the increasing number of people displaced by natural events is not only driven by a rise in the quantity of large and mega disasters but also by an increase in population that are living or has moved to places of high risk, such as flood- or storm-prone coastal zones or cities: “Population has increased and people have moved to urban centers towards industrial and tourism jobs, in part driven by increasing drought and uncertain food and livelihood security.” (CARE Danmark, 2017: 15)

As indicated above, sudden onset-events is associated with a broad range of migration responses:

- Most authors suggest that sudden onset-events in most cases lead to short-term internal movement (IPCC, 2014: 767; CARE Danmark, 2016: 16). Findlay has pointed out the following: “The vast majority of displacements associated with natural hazards such as floods and droughts […] are short-term with the motive of the movers being to return as soon as possible to their homes and communities. As a consequence, the decision about where to move to is shaped predominantly by a desire for proximi-

ty to the point of origin, so that return visits can be made to retrieve items from their former homes and to guard against looting." (Findlay, 2011: S53)

- However, the IDMC also emphasizes that the common assumption that sudden onset events *only* cause short-term displacement cannot be sustained. Although there is a lack of data there is quite a high number of people displaced by a disaster for several years up to several decades, the so-called "protracted displacement". In Europe, the IDMC mentions only cases related to geophysical hazards. Concerning Asia, the IDMC refers to Pakistan, Bangladesh and Indonesia, where thousands of people have been displaced due to floods, landslides or cyclones for up to ten years, including "people whose former homes have become permanently inaccessible or unsafe, informal settlers, poor tenants and people who face discrimination based on their class, ethnicity, gender or age" (IDMC, 2015: 47). The cases mentioned in Africa refer to floods in Mozambique, Nigeria and Zimbabwe. The IDMC stresses that the implications of such hazards "can continue for extended periods of time, and even become a permanent barrier to return. Some hazards remain a physical threat over longer periods of time. Repeated exposure to frequent short-lived hazards can have a similar effect to a long-lasting event." (IDMC, 2015: 48)

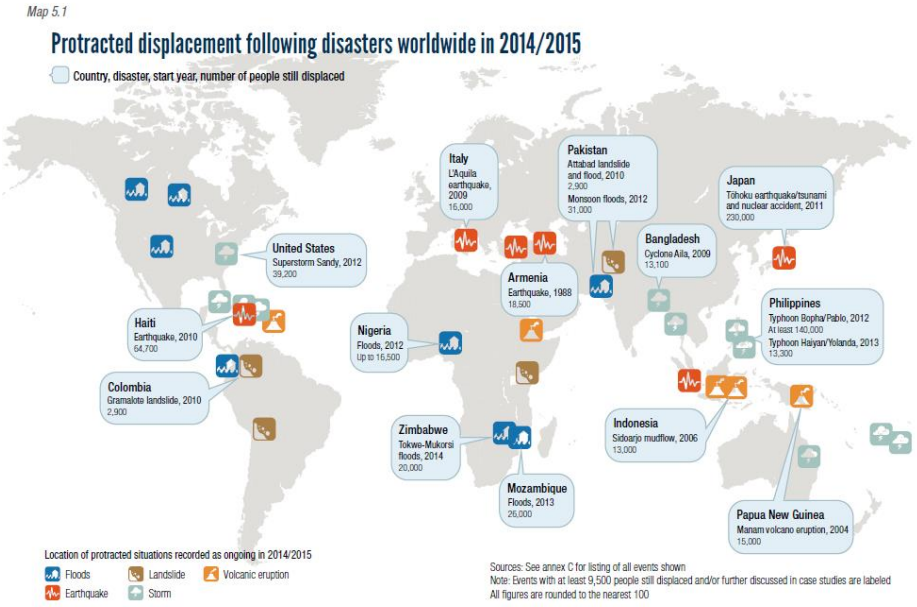

Figure 11 Taken from IDMC (2015: 49)

- Migration as a consequence of sudden-onset disasters may also lead to forms of circular movement. For example, in Mozambique floods and cyclones led to the destruction of homes and the bases of livelihood as well as to large population displacement. Accommodation destroyed through cyclones in 2000 and 2007 was rebuilt in the original places (Stal, 2009: 21). Floods displaced thousands in low-lying river areas (i.e. most fertile areas for agriculture). Many of the persons displaced by the floods were resettled in government resettlement centres on a permanent or semi-permanent basis. As resettlement centres are located in dry areas people tended to return to the low-lying fertile areas periodically in order to grow crops. The duration of the return depended on the distance between the resettlement centres and the crop fields (Ibid.).

- Sudden-onset disaster can also lead to non-movement. People may either be unwilling or unable to move. The second point refers to the case of "trapped populations" (see below). For example, in the context of Hurricane Katrina it was reported that about 70,000 inhabitants of New Orleans were not able to move, most of them belong to the black and poorer residents of the city (see Bytheway, 2007; Landry et al, 2007).

- Rapid on-set disasters may lead also to an influx of immigrants in the long run due to reconstruction work (IPCC, 2014: 767, Paul, 2005).
- As indicated above, there has been increasing evidence that may people may not necessarily move away from zones at risk but may rather move towards areas, mostly cities, prone to disasters (IDMC, 2015: 8 and 24):

  > Most modern urban centres were founded centuries ago based on considerations of defence, agricultural viability and transport. These factors drove humans to settle in areas prone to hazards, along coasts and rivers, on flood plains and in seismically active areas. When urban growth in such areas is well managed, the risk of displacement may increase only modestly. In many developing countries, however, urban growth has been rapid, unplanned and poorly governed, leading to high exposure and vulnerability. (IDMC, 2015: 24)

  Thus, people may move towards zones of heightened environmental risk (see also de Sherbinin, 2012; Geddes, 2015) in order to seek for job opportunities or to be near the community (see CARE Danmark, 2016: 16, Ranque and Quetulio-Navarra, 2015: 50-52).

F-3.1.3 Slow-onset events

Another category refers to different patterns of migration in the context of slow-onset processes such as degradation of the environment, de- or increase of precipitation, increase in droughts or rise of sea levels.

This kind of migration is difficult to grasp – also in terms of statistical data – as the impact of climate change on the decision to migrate is very complex and often an indirect one. The impact of rising sea levels on coastal systems and low-lying areas and, thus, on human settlement in these regions will be serious. Without taking into consideration future adaptation measures to protect the population residing in these areas it is estimated that "72 to 187 million people will be displaced due to land loss due to submergence and erosion by 2100" (IPCC, 2014a: 382). As discussed above this figure is not reliable and does not take into account the various ways migration is influenced by a broad range of social, economic and political factors including. The IPCC further highlights that Asia will be particularly affected by this kind of environmental threat as cities "identified for both population and asset exposure" are concentrated in Asia (Ibid.: 555). However, it has to be emphasized that these numbers are estimates not taking into consideration adaptation measures to protect cities and settlements.

The degradation of the environment, de- or increase of precipitation, desertification and increase in droughts are examples of other slow-onset processes where the effect on migration is difficult to ascertain as those forms of movement are closely interlinked with or are having an effect on social, economic, political or other factors which have an impact on the decision to migrate. The *Climate Change, Environment and Migration Alliance* states:

> Although slow-onset environmental processes are less visible than extreme events, over longer timescales, they tend to have a greater impact on the movement of people than natural disasters. Slow-onset events can produce a wide spectrum of migration flows, including cross-border as well as rural to rural and rural to urban, with the majority of movements likely to take place either internally or cross-border to neighbouring countries. (CCEMA, 2010: 2)

Although researchers are generally agreeing on the thesis that slow-onset processes of the environment may have an effect on migration and that migration is often used as an adaptation strategy in this context, the calculations on how many people will do so are very cautious. In general, it can be established that the dynamics and various interlinking factors that are relevant for the nexus between environmental degradation/slow onset processes and migration are poorly understood and the migration outcomes are very diverse, complex and are only to be understood with taking into account the local historical, social, economic, cultural and political context.

Yet, there are some insights which are particularly relevant for migration decisions in the context of slow-onset processes: Studies suggest that environmental degradation especially has an effect on economic drivers, thus, impacting on household wealth and income. The *Foresight Report* states that environmental change "is likely to lead to an increase in short term, rural-rural migration as households look to diversify incomes and secure livelihoods. It is also likely to reduce longer-distance migration, which requires economic assets" (Foresight, 2011: 71, see also Geddes, 2015: 481; Hugo, 2010: 25-26). The thesis that environmental changes have indirect effects on migration through their negative impact on income and wages has been confirmed by various studies (e.g., Coniglio and Pesce, 2015; Beine and Parsons, 2013).

In addition, environmental change can also interact with social drivers, which, for example, means people are more likely to migrate if they have social networks which help them in moving to another place, finding a job or an apartment etc. Such "migration networks" constitute an important social resource (Hugo, 2010: 24-25). Migration networks are not the only social resource or driver. Collinson points out that there are a broad range of socio-cultural factors that have an influence on peoples capacity to adapt and, thus, also on the migration strategies and dynamics in the context of environmental change, including

- "kinship and other social institutions affecting access to and use of land and other natural resources;
- Migrant networks supporting mobility and/or resettlement in response to stresses or shocks;
- Flexibility and/or dominant patterns in household structure and organisation and associated adaptability in livelihood strategies;
- Experience of responding to chronic environmental stresses and recurrent shocks;
- Institutions of resource sharing (household, community and intercommunity levels);
- Patron-client relations;
- Intergenerational and gender relations, including gendered control of and access to livelihood resources within households, and intergenerational and/or gender relations affecting links between those leaving and those staying behind (remittances, follow-on migration, etc.)
- Consumption behaviours; and
- (relative) access to information, markets, social networks, technology, education and other services." (Collinson, 2011: 14)

This, again, indicates that migration patterns are diverse and multi-faceted in the context of environmental degradation.

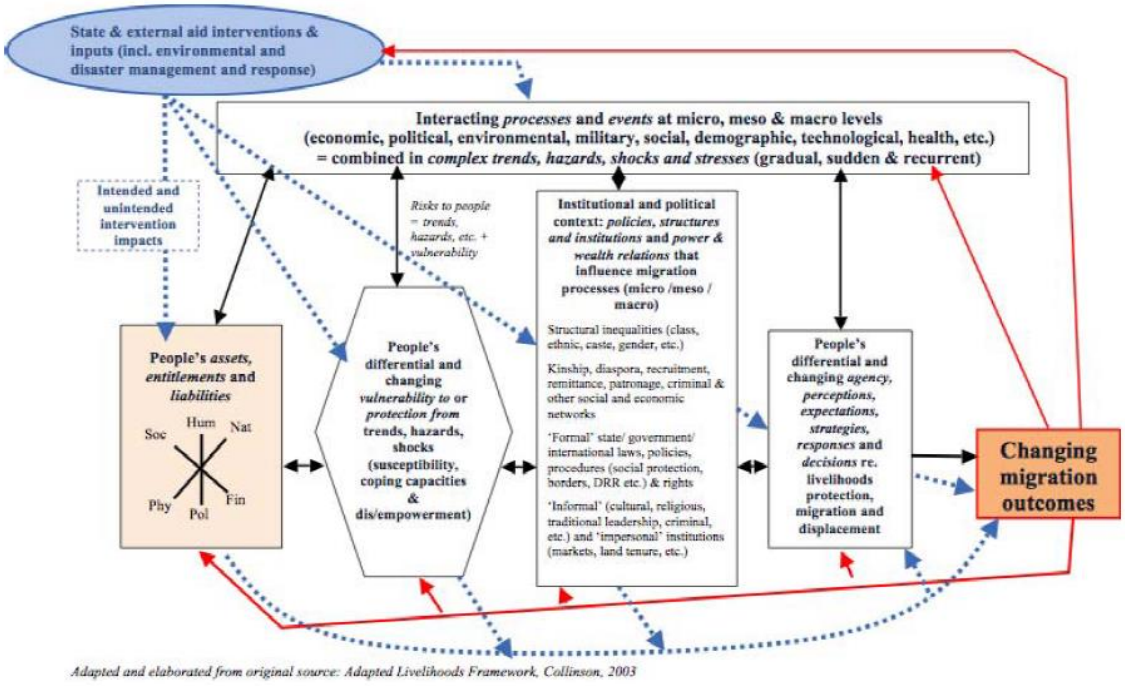

Figure 12 Livelihood framework to analyse migration in situations of environmental change. Taken from Collinson (2011: 10)

A specific form of slow-onset events – and very often this form is mentioned as a scenario of its own – is sea-level rise and its effects on coasts as well as low-lying islands. This form of climatic impact has attracted much scholarly, popular as well as political attention (see, for example, Campbell, 2010; McAdam, 2012; Oliver-Smith, 2010). It raises legal questions concerning for example the legal status of people from disappearing states or social questions with regard to the social impact of, for example, resettlement of whole communities and populations. The issue is complicated by the fact, that the extent of sea level change in coastal areas and low-lying islands is far from clear (see Oliver-Smith, 2010: 170): "global sea-level rise may generate migration in far more complex ways than the case of island states." (Mor-

rissey, 2009: 32) Thus, migration outcomes in this context also depend on wide range of factors including adaptive capacities as well as other social and economic factors that are important in the context of migration decisions.

A broad range of studies is available on the issue of droughts which are also sometimes counted as extreme events. A considerable number of studies have been carried out taking also into consideration a historical perspective. In the context of these studies it has been revealed that migration is not a novel form of responding to environmental changes but is rather a longstanding adaptive strategy (see Morrissey, 2009: 20). In addition, also in this context there are a broad range of migration responses to drought-related events. A very interesting study conducted by Findley on migrants during the 1983 to 1985 drought in Mali found out that the type of migration is closely tied to household assets. Availability of labour, capital and education were of crucial importance in determining the type of migration. Findley found out that international migration was not a feasible response to drought because of the high cost. Findley observed that droughts decreased international migration strategies and replaced them instead with short term cyclical migration. (Findley, 1994; Morrissey, 2009: 21)

Another insightful study on the interrelation between economic and environmental factors of migration in the context of slow environmental degradation was carried out by Tamer Afifi focusing on the example of Niger (2011: e95-e124). The main important environmental problems in Niger are recurring droughts, soil degradation, the shrinking of Lake Chad, problems with the Niger River, deforestation and sand intrusion. The main important conclusions of his research indicate that

- there are gendered patterns of migration. It is mostly young men who migrate within and outside Niger; women, elderly and children are staying behind.
- migration is a complex issue depending on various factors, thus, it is hard to link migrants to the environment. Most people interviewed in the study refer to economic factors such as poverty or unemployment. However, the author concludes that these factors mostly could be traced back to environmental problems. Some environmental problems are also due to overexploitation (e.g. Lake Chad).
- environmental degradation does have an impact on migration patterns: “Although seasonal migration is part of the Nigerien culture, permanent migration – mainly within the country but also to other African countries in the South – is becoming a norm.” (Afifi, 2011: e116)
- migration to Europe is not a desired option as people prefer to stay close to their land. (Afifi, 2011: e109-e117)

Another comparative study, that analysed the use of migration to manage the risk of rainfall variability and food security found out that migration is used in many forms in order to diversify income or also as a survival strategy:

> “The research revealed that some households use migration as a successful means of increasing their resilience. For others, it is a last resort that perpetuates the negative cycle of poverty and hunger or – worse – erodes their resilience to current and future climatic stressors. For still other households and for some particularly vulnerable populations, migration is not a feasible option either for increasing resilience or for avoiding the worst consequences of food insecurity.” (Warner et al, 2012: 115)

In conclusion, migration patterns in the context of slow-onset events are diverse and context-specific; the inter-linkages of different and diverse factors are still not well-understood and the migration outcomes are difficult to project. However, very often this scenario is associated with diverse forms of labour migration – internal or external, short-term, circular or permanent. Labour migration in the context of climate change is very often seen as a strategy to diversify income. Thus, it is very often understood as an adaptation strategy (for a discussion see below; see also (Barnett and Webber, 2010: 42). It is, however, also the case that it hampers migration or that people migrate towards zones of risk. Very often environmental

factors intensify existing migration patterns rather than produce entirely new migration responses (Ibid.). Slow-onset events are also very often associated with rural to urban migration: "Longer term environmental change caused by climate change also amplifies existing trends such as rural to urban migration, though results diverge on the importance of climate change and resource scarcity in driving such trends." (IPCC, 2014: 770)

F-3.1.3.1 Migration as Adaptation

Adaptation is a concept used quite frequently in the context of the debate on climate change. However, although the concept is applied quite extensively the definition of adaptation is far from being undisputed. Smit et al (2000: 228) have analysed several definitions and pointed out that they "all refer to adjustments in a system in response to (or in the light of) climatic stimuli, but they also indicate differences in scope, application and interpretation of the term adaptation". They further observed that there are differences concerning the questions of "adaptation to what?", "who or what adapts" and "how does adaptation occur?"

Before discussing more in-depth the notion of migration as adaptation I would like to shortly outline the concepts of adaptation and adaptive capacity: The Fifth Assessment Report of the Intergovernmental Panel on Climate Change defines adaptation as follows:

> The process of adjustment to actual or expected climate and its effects. In human systems, adaptation seeks to moderate or avoid harm or exploit beneficial opportunities. In some natural systems, human intervention may facilitate adjustment to expected climate and its effects. (IPCC, 2014a: 1758)

Although researchers as well as policy makers use the concept of adaptation quite commonly there has been considerable discussion about the adequacy, implications and the concept of adaptation itself. Supporters of the term have criticised that concerning policy responses to effects of climate change there is an emphasis on mitigation policies. They have pointed out that "[t]he focus on mitigation has created policy instruments that are biased against adaptation" (Pielke, Prins, Rayner and Sarewitz, 2007: 598). From this point of view, there are several reasons why there should be a greater emphasis on adaptation measures: Firstly, there is a time lag. It will take quite a long time until mitigation measures (e.g. reduction of greenhouse-gas emissions) will make an impact. Secondly, non-climate factors constitute an essential factor concerning the vulnerability of a society. The focus on mitigation policies neglects for example economic or social factors, which are important dimensions in regard to the vulnerability of a society (Ibid.: 597). Therefore a broader definition of adaptation is needed, because "adaptation describes a much broader range of actions that make societies more robust to changes, including, but not limited to, those caused by climate change." (Ibid.) Defining adaptation as "a cost of failed mitigation" would be devastating for those affected by the dangers and hazards commonly debated in the context of climate change. Rather, a more conducive approach would mean to grasp adaptation in terms of sustainable development. (Ibid.: 598)

The IPCC has taken this criticism seriously and gradually broadened its understanding of adaptation, originally focusing on biophysical vulnerability and moving towards the "wider social and economic drivers of vulnerability and people's ability to respond (…). These drivers include the gender, age, health, social status, and ethnicity of individuals and groups, and the institutions in place locally, nationally, regionally, and internationally." (IPCC, 2014a: 836)

Adger et al (2009) take the same line of criticism although not rejecting the concept as such. They argue that the debate on limits to adaptation often concentrates on three dimensions: ecological and physical limits, economic limits and technological limits. Social limits to adaptation to climate change are frequently neglected. According to their analysis between four different dimensions of limits to adaptation can be differentiated: Firstly, they underline that any limits to adaptation depend on the objectives of adaptation. These objectives in turn are dependent on diverse values. As these social and cultural values are diverse, this may cause paralysis of adaptation measures (e.g. failure or contradictory outcomes). Secondly, adaptation efforts may be limited by uncertain knowledge of future climate change. "Differences in

how social, organisational or individual understandings of future weather and climate are constructed can therefore lead to contrasting types of adaptation decision-making, or indeed can determine whether or not adaptation occurs." (Adger et al, 2009: 344) Thirdly, Adger et al propose that social and individual characteristics act as limits to adaptation. The actions of individuals and societies are influenced by deeply-embedded cultural and societal norms and values.

> "These, together with perceptions of risk, knowledge, experience, and habitual behaviour, norms and values determine what is perceived to be a limit to adaptation – at both individual and social levels in any particular society – and what is not. These limits are therefore not absolute and insurmountable but rather socially constructed, subjective and mutable. It depends on individuals' underlying values and their enacting by societies whether a limit is perceived as such." (Adger et al, 2009: 344-345)

The last dimension they mention concerns the systematic undervaluation of involuntary loss of places and cultures disguised as real, experience but subjective limits to adaptation. As the experience of individuals and communities are bound up in local places physical changes will have profound cultural and symbolic impacts. "The current methods of valuing loss do not include cultural and symbolic values, leading to an undervaluation in comparison with more easily valued and tangible assets." (Adger et al, 2009: 350)

Adger and Barnett (2009) voice another line of concern about adaptation to climate change. They argue "that the scale of change and interconnectedness of impacts may be such that the window of opportunity for adaption is smaller than previously imagined". (Adger and Barnett, 2009: 2800) Furthermore they are concerned that the adaptive capacity will not necessarily transferred into action and that adaptation measures already in place are not sustainable. The latter concern is also defined by the term maladaptation. The last point they mention refers to the social context which might be important for understanding the goals of adaptation, the measures of its success and the trade-offs that may be involved. (Adger and Barnett, 2009: 2803)

A further point of criticism is the social-Darwinist origin of the term (Engle, 2011: 648). The term originally was used as a biological concept ("survival of the fittest"). Ribot argues that applying biological metaphors to society is a problematic venture and "should not result in shirking of responsibility" (Ribot, 2011: 1161).

Another concept which is closely connected to adaptation and which has gained in importance is the concept of **adaptive capacity**. According to the IPCC adaptive capacity refers to "[t]he ability of systems, institutions, humans, and other organisms to adjust to potential damage, to take advantage of opportunities, or to respond to consequences." (IPCC, 2014a: 1758). Adaptive capacity is usually understood as referring to the preconditions that are necessary to make adaptation possible. It means the ability of a community to deal with the effects of such hazards (e.g. recurring droughts). Increased exposure increases vulnerability and strengthening adaptive capacity reduces vulnerability. (McLeman and Smit, 2006: 34) Both elements vary depending on the place and time. Adaptive capacity depends not only on economic but also on social capital (e.g. social networks), further on the governance at different levels or the degree to which human rights are observed in a country or whether a human rights based approach was pursued in all the measures/policies taken (e.g. DRR measures, planned relocation/resettlement – could persons affected participate in decision-making, was account taken of the special needs of persons etc).

Adaptive capacity is influenced by economic wealth, technology, infrastructure, information and skills, institutions and equity, public health resource of communities or regions (McMichael, McMichael, Berry and Bowen, 2010: 213) but also by "[l]ess tangible factors, such as community cohesion, governance structures and social inclusion" which are usually "related to stronger communities and better outcomes in health and well-being". (McMichael, McMichael, Berry and Bowen, 2010: 213; see also Kawachi, Subramanian and Kim, 2008) It is argued that "[m]ost adaptation to the risk of climate-related stressors and disasters needs to occur at the community level" (McMichael, McMichael, Berry and Bowen, 2010: 213; see

also Keim, 2008: 508) (thus the public health system is "well placed to take a leadership role in building community resilience to climate-related stressors and disasters"). (McMichael, McMichael, Berry and Bowen, 2010: 213)

Adaptive capacity (as well as vulnerability) is "shaped by **differential access to economic, political and social resources**"**.** While "developing countries" are usually seen to have low adaptive capacity, certain communities may – despite little economic wealth – be resilient due to their **social capital**.[6] The authors refer to social capital as a "'glue' for adaptive capacity, particularly when dealing with hazardous events". (McMichael, McMichael, Berry and Bowen, 2010: 213, see also Adger, 2003: 392)

Adaptive capacity is a context-specific concept. As mentioned above it is dependent on the local, social, economic or political context which means that the concept of adaptive capacity exhibits considerable variations. But the various dimensions of adaptive capacity are not independent or separate: "the capacity of a household to cope with climate risks depends to some degree on the enabling environment of the community, and the adaptive capacity of the community is reflective of the resources and processes of the region" (Smit and Wandel, 2006: 287). Therefore, adaptive capacity is uneven across society, individuals and groups dispose in different ways and to a different degree of capacity to adapt to climate change. However, the indicators supposed to influence the degree of this capacity are far from being agreed on. (IPCC, 2007: 728) It is assumed that economic and structural inequalities hamper the capacity to adapt to climate changes. Therefore, "adaptive capacity building for adaptation and development needs to squarely address the structural inequalities that create and sustain poverty, constrain access to resources and threaten their long-term sustainability." (Lemos, Boyd, Tomkins, Osbahr and Liverman, 2007)

Discussing **migration in terms of adaptation** or the enhancement of adaptive capacity has gradually gained in importance in the context of climate change. Basically, to understand migration as a form of adaptation refers to the fact that migration might be a strategy to adjust to environmental changes in order to reduce vulnerabilities or enhance the resilience of a community, of certain groups or families.

Migration as adaptation can take place on several levels: McLeman and Smit (2006) differentiate between the community and the private level. „If the community's institutions are unable to cope with the changed environment, individual households remain vulnerable and may be obliged to implement their own adaptive strategies. For some households, migration of one or more members away from the community may be an option." (McLeman and Smit, 2006: 37) On the community level it refers to the fact, that authorities include migration as an adaptive strategy pursued and enhanced on the community level: The Foresight Final Project Report stresses the need for national policies to base their policies concerning migration as adaptation on a comprehensive assessment of the transformational impact that migration may have on individuals as well as on communities. There might be also the necessity to organize the relocation of large populations from rural and urban areas which requires careful planning and management. Furthermore in some cases there might be the requirement to build up new urban centres which is an enormous challenge for urban planning. Above all community authorities are called on to establish policies to facilitate migration as adaptation in order to allow people to build themselves a better life. (Foresight, 2011: 176-185) However, regarding migration as an adaptive strategy it is important to keep in mind both or even more levels. Not only private households and individuals are important for the analysis but also different community levels and the actors involved on these levels: local, regional or national governments, INGOs, NGOs as well as companies. Furthermore it is crucial to take into account the distinction between migration as planned adaptation and migration as au-

[6] Some communities might be "quite resilient because they have had to rely on their own resources to develop innovative ways to cope with challenges". "This collective experience alone can be protective for health, especially for mental health; working together to resolve shared problems builds social capital". "Communities rich in social capital display dense networks with high levels of social interaction, connectedness and cohesion, all of which are related to better health, including via the sharing and uptake of health-related information." See McMichael, A.J., McMichael, C.E., Berry, H.L. and Bowen, K. (2010) 214 with reference to various authors.

tonomous adaptation and the interrelation between those two forms or the reciprocal effect the one may have on the other.

As I have mentioned above the issue what forms of migration are adaptive strategies is quite controversial. Generally, there has been a tendency to reframe the issue of environmental related migrations by emphasizing the multifaceted complexity of the issue and by grasping more and more forms of migration in terms of adaptation. Reframing climate migration as a form of adaptation, entails far-reaching consequences concerning the assessment of the debate: "Conceived as adaptation, migration is not forced, but voluntary; it is not reactive, but preventive; it is not precipitated, but anticipated; it is not "inflicted" on public authorities, but decided and organized by them or, at least, with them, with the aim of reaching a mutually beneficial program. Like other adaptation strategies, migration may be a way for a community to cope with a change in environmental conditions. This may even be the only realistic strategy under certain circumstances." (Mayer, 2011) Hence, conceptualising environmental migration as forms of adaptation means a politicization of the topic and broadens the scope of action. Using a broad definition of adaptation it also means, that the focus is on social and environmental processes and also decision-making processes i.e. political processes.

Migration can contribute positively to strengthening the adaptive capacities of the population or families in the countries of origin in many ways (see, for example, Melde, Lacko and Gemenne, 2017). That means migration understood as an adaptive strategy may not only contribute to the ability or the potential of a system to react successfully to environmental change but also to enable certain groups or organisations to benefit from climate change. The benefits may not only concern the local level but have an effect on the national and community level. The contribution mentioned quite frequently are remittances sent back to the countries of origin (Barnett and Webber, 2009: 22; 2010: 44-45; Melde, Lacko and Gemenne, 2017: 86, Tacoli, 2009: 520). In this sense, migration as adaptation is important for poverty reduction (Melde, Lacko and Gemenne, 2017: xvi) Barnett and Webber mention a range of positive effects from such a form of income diversification: smoothing consumption of basic needs such as food across seasons; sustaining access to basic needs in times of livelihood shocks; paying for the acquisition of human, social, physical and natural capital, and increasing demand and stimulating local production (Barnett and Webber, 2010: 44). Essentially, remittances contribute to increase the level of resources of persons in the country of origin and therefore strengthening the capacity of households to cope with climatic risks. Besides financial benefits migrants can enhance the adaptive capacity in the countries of origin by bringing back information and knowledge and by transferring new skills. Migration is also seen to expand "the social networks of households and communities, reducing the risks associated with short-term displacement in response to a crisis" (Barnett and Webber, 2010: 45). But benefits are not only restricted to the countries of origins, they also refer to the host countries. Migrants often bring resources with them that are valuable for the host countries as well including their skills, knowledge, experiences and labour (Barnett and Webber, 2009: 24, see also Melde, Lacko and Gemenne, 2017:86).

But migration as an adaptive strategy is also limited by several aspects: It requires financial resources as moving and the settlement and provisions in new locations generates costs. So, migration as an adaptive strategy is not available to the poorest but is restricted mostly to the lower middle classes (Barnett and Webber, 2010: 41). Besides these financial barriers, Barnett and Webber also mention information and legal barriers, the former referring to a lack of knowledge about where to go, how to get there and ways to make a living upon arrival. The latter indicates barriers in reference to the conditions of entry and residence after moving across borders (Barnett and Webber, 2010: 41). But there are also social barriers which limit the potential of migration as adaptation:

> "For immigrants to arrive and endure new cultural milieus and labour markets also represent a challenge and thus a potential source of new vulnerabilities. Work might be economically more rewarding, but social life has to be recreated away from familiar networks, while social barriers and inequalities can often be recast." (Julca, 2011: 33)

Furthermore, it needs to be borne in mind that in many societies "migration has already been a livelihood strategy for generations. Shocks and stresses evoked by the consequences of a changing climate that threaten people's livelihoods are therefore also likely to have impacts on their migratory behaviour" (Kniveton, Schmidt-Verkerk, Smith and Black, 2008: 5). Migration might increase (in search for a living elsewhere) or decrease (since fewer people can afford to move). Migrants could also choose "different destinations that they perceive as more appropriate for their changing needs" (Kniveton, Schmidt-Verkerk, Smith and Black, 2008: 5).

F-3.1.4 Conflict

The interrelation between climate change and conflict and its impact on migration has raised broad discussions. In public and political debate climate change is very often understood as a direct catalyst of conflict, as, for example, the UN Secretary-General Antonio Guterres claims (Farand, 2017). The argumentative interlinkage with migration refers to the assumption that increased conflicts, in return, would force more people to migrate and flee their countries of origins. Barnett and Adger (2007) have proposed the following ways in which climate change may affect human security and also may lead to (violent) conflict:

a) by increasing insecurity as a result of reduced access to and a decline in the quality of natural resources;

b) this increased insecurity may lead to a higher risk of violent conflict;

c) by reducing the capacity of states to guarantee security and peace; and

d) the combination of increased (quality) of livelihoods and a decreased capability of state agency may lead to a higher risk of violent conflict.

However, as a many authors have pointed out since, there is a lack of evidence that the assumption of such a direct link can be sustained (see for example, Buhaug et al, 2014: 396; Burrows and Kinney, 2016; IPCC, 2014a: 771-774; Popovski, 2017; Raleigh, 2011, Theisen, Gleditsch and Buhaug, 2013: 613-625). As Nordås and Gleditsch have argued:

> "[…] the causal chains suggested in the literature have so far rarely been substantiated with reliable evidence. Given the combined uncertainties of climate and conflict research, the gaps in our knowledge about the consequences of climate change for conflict and security appear daunting." (Nordås and Gleditsch, 2007: 627)

And the IPCC has concluded from reviewing a considerable amount of literature on the link between climate change and conflict that some of the studies reviewed establish a weak link, some of the research does not find a link at all and "collectively the research does not conclude that there is a strong positive relationship between warming and armed conflict" (IPPC, 2014a: 772). The strongest conclusion they draw from this review of different studies is that there is a justifiable common concern that climate change increases the risk of armed conflict in certain circumstances (ibid.).

In addition, there are other factors, which seem to be more important when it comes to the likelihood of conflict. Hendrix and Glaser (2007: 711) argue that it is not first and foremost the availability of freshwater resources, but rather the access to the resources that are important in the context of conflict. "Unequal access and ineffective distribution, which are central to explaining poverty in the midst of resource wealth […] have complex political and economic determinants that merit much closer analysis." (Ibid.)

Also Burrows and Kinney (2016) refer to the complexity of the link between climate change and migration as well as between migration and conflict. They also highlight that climate change associated incidents may lead to increased solidarity, for example, populations often unite after natural disasters and the risk of violent conflict after such an event can be quite low. Or, as Popovski (2017) has put it: "When people face climate dangers and scarcity, they may decide to fight, but similarly they may decide to cooperate." Burrows and Kinney refer to several factors which have a stabilising or destabilising effect in this context: the capacity of

political institutions to facilitate adaptation and reduce vulnerability, education and preparedness, social capital such as neighbourhood networks and cohesion, technology or if the region has a history of conflict (Burrows and Kinney, 2016: 11-12).

The Syrian civil war, for example, is very often associated with the impact of climate change. However, as has been highlighted by several authors (see, for example, Gleick, 2014; Leenders, 2012; Randall, undated), there are several complex and interrelated factors that led to this violent conflict. Gleick (2014), for example, offers a very insightful analysis of this conflict. First of all, he points out that water has frequently played a multiple role in conflicts:

> "Water-related conflicts occur in many forms, including disputes over access to water and the control of water systems, the targeting of water infrastructure and systems during conventional conflicts and terrorist actions, and the use of water as a weapon." (Gleick, 2014: 331)

Although the role of droughts in the Syrian conflict is quite important, other factors such as water mismanagement, extensive exploitation of groundwater, a lack of international agreements over shared water resources, poor agricultural planning and long-standing political, religious and social disputes added considerably to food insecurity and a growing economic and political uncertainty. Thus, Gleick concludes,

> "[s]evere multiyear drought beginning in the mid-2000s, combined with inefficient and often unmodernized irrigation systems and water abstractions by other parties in the eastern Mediterranean, including especially Syria, contributed to the displacement of large populations from rural to urban centers, food insecurity for more than a million people, and increased unemployment – with subsequent effects on political stability." (Gleick, 2014: 338)

Subsequently, also the nexus between climate change, conflict and migration seems to be very complex. First of all, migration is not an automatic response to conflict. Violent conflict does not automatically lead to the migration of large part of the population. As Raleigh has reasoned:

> "People exercise a great deal of agency when confronted with conflict and relocation is not an automatic reaction to macro political forces. Movement on the local level depends on nature, intensity, location, external influences and targets. Where and when to move depends largely on identity, class, assets, feasibility, assistance and social networks." (Raleigh, 2011: S85)

In general, as already discussed in this paper the literature suggests that social, political and economic factors such as political instability or inequality are decisive factors with regard to the relationship between climate change, conflict and migration.

F-3.1.5 Trapped populations

Political factors such as conflict may also exacerbate movement, or, on the contrary, "interaction of environmental change with conflict and poverty means that planned, safe migration may not be an option and consequently people can become extremely vulnerable and 'trapped' in dangerous circumstances" (Foresight, 2011:73).

The issue of "trapped populations" refers to people who cannot move although the environment is deteriorating and becoming a serious threat because they don't have the means to do so. Migration needs financial and social resources and people who do not "possess the assets to migrate will be trapped in increasingly precarious environments" (Geddes 2015: 486). Thus, environmental change can increase the incentive to move, but it can also limit the capacity to do so. "The greatest risks will be borne by those who are unable or unwilling to relocate, and may be exacerbated by maladaptive policies designed to prevent migration" (Black, Bennett, Thomas and Beddington, 2011: 447). Limits to movement might comprise financial barriers such as costs of transport or subsistence on arrival, information barriers such as a lack of education and knowledge as well as legal barriers, including a lack of legal possibilities to migrate (see Barnett and Webber, 2010: 41-42).

The notion of "trapped populations" is a relatively new concept. Black and Collyer point out that discussions on the concept of trapped must differentiate between the ability, desire and need to move. "Distinguishing between those who choose to stay and those who are forced to stay is essential if the notion of trapped populations is to have anything other than a very broad conceptual application." (Black and Collyer, 2014: 54) A well-known example in this context is the case of Hurricane Katrina hitting New Orleans in 2005 (Bytheway, 2007; Landry et al, 2007) where especially people without adequate resources were trapped in the city. But specific individuals, groups of people or communities are not only rendered immobile with regard to rapid onset-disasters but also in the context of slow-onset hazards such as droughts and other forms of slow environmental degradations.

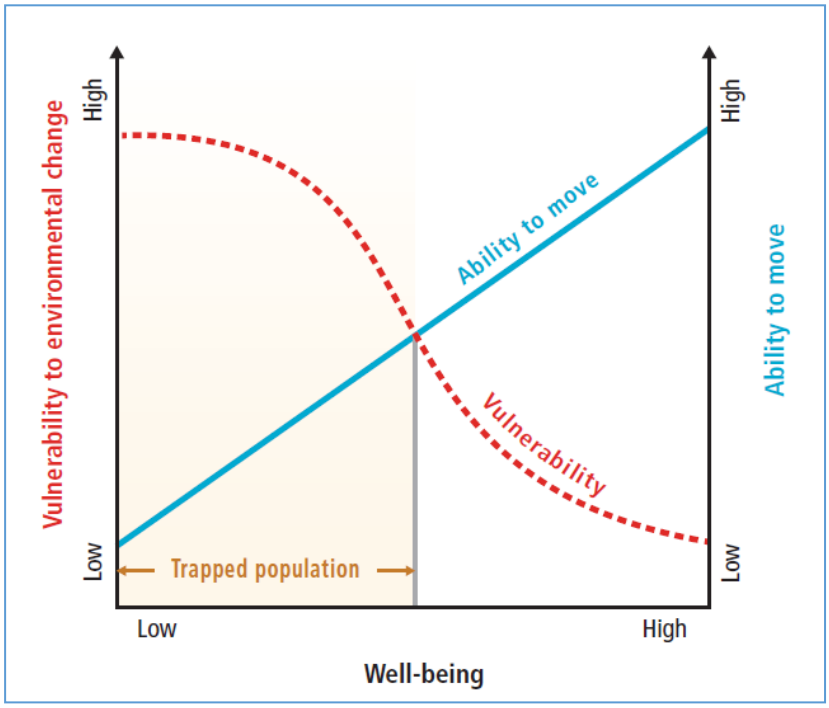

Figure 13 Taken from IPCC (2014: 768): Relationship between 'vulnerability' to environmental change and mobility. The graph demonstrates that those who are most exposed and most affected by the effects of climate change may have only limited ability to move.

Concerning the scope of the problem the FORESIGHT report has highlighted that environmental change "is equally likely to prevent migration as it is to increase it" (Foresight, 2011: 104). The exact scenarios are very hard to determine. The FORESIGHT report refers to two important relationship that are to be considered in this regard:

> […] first, migration can be a form of livelihood diversification which enables communities to remain in sending areas, in the long run. Reduced options for migration may, in the long run, lead to a larger migration of whole households or communities, in an unplanned and unmanageable way. The second is that where populations are trapped in vulnerable situations this is likely to lead to an increased chance of widespread displacement in the long run. This is especially the case with extreme environmental events, such as floods, cyclones and tidal surges, which are predicted to become more frequent or intense, notably in the tropics, over the next 50 years. (Foresight, 2011: 105)

Another factor that may lead to the rise of trapped population in general but also with regard to climate change and migration is the closing of borders and the increasing of border security. As a consequence, international borders become less permeable. April T. Humble has pointed out that this is already an issue in the Sahel region, a region that is particularly affected by increased desertification and decrease in rainfall as well as a change in precipitation patterns. "However, national borders in the region – such as Morocco and Algeria and

between Mauritania and Mali – are becoming increasingly impermeable and dangerous for migrants to cross, with reports of migrants approaching the borders being shot at, sometimes fatally, by border guards." (Humble, 2014: 57)

To sum up, the issue of "trapped population" is increasingly defined to be an issue in the context of climate change. The notion of trapped population refers to people who desire to move and where there is the need to move due to environmental threats, however, who do not have the necessary means to migrate. Trapped populations may also refer to people on the move who are, for example due to increased impenetrability of borders, stuck en route to their destination. It could also be argued that "protracted displacement" is a specific form of trapped population, especially when considering that people that are not so well off are often in a longer protracted situation than people better off as, for example, their houses have suffered greater damage or going back is also costly (see IPCC 2014a: 767).

F-3.1.6 In what way are these scenarios relevant for Europe?

One objective of this short-term research project was to consider how migration scenarios in the context of climate change might be relevant for Europe. The relevance of these migration scenarios can be discussed on two levels: On the one hand, it refers to the way climate change may lead to migration within and between European countries and on the other hand it refers to the potential influx of migrants from non-European countries. In the following, each of these levels will be discussed separately.

F-3.1.6.1 The impact of climate change on Europe and the question of migrating Europeans

Climate change will have an impact on Europe. With regard to Europe, the IPCC mentions varying changes in temperature and rainfall, with projected rises in temperature and increasing precipitation in Northern Europe and decreasing precipitation in Southern Europe, "a marked increase in high temperature extremes […], meteorological droughts […] and heavy precipitation events […] with variations across Europe, and small changes in wind speed extremes (IPCC, 2014a: 1270). Furthermore, the IPCC projects systematic failures across European countries caused by extreme climate events and an increased coastal and river flood risk due to extreme rainfall (Ibid: 1271). However, the IPCC also notes that "Direct economic river flood damages in Europe have increased over recent decades […] but this increase is due to development in flood zones and not due to observed climate change." (IPCC, 2014a: 1271) In addition, the IPCC expects that climate change will inter alia

- impede economic activity in Southern Europe more than in other sub-regions,
- impact of sea level rise on populations and infrastructure in coastal regions,
- affect energy production and transmission,
- reduce water availability and
- affect human health.

As emphasised above exposure is only one factor, which is of relevance in the context of climate change and migration. The concepts of vulnerability, resilience and adaptive capacity are particularly important concerning the decision to move. There are only a few studies available that discuss the relation of climate change and migration within Europe. The following points can be summarised in this context:

- It is widely recognised that climate change will disproportionately affect poorer regions and low income countries (see, e.g. United Nations, 2009). Poverty and inequality is, thus, a decisive factor when it comes to experiencing the negative consequences of climate and environmental changes: "Climate-change impacts are expected to exacerbate poverty in most developing countries and create new poverty pockets in countries with increasing inequality, in both developed and developing

countries." (IPCC, 2014a: 20) Or, as the UN 2009 Global Assessment Report on Disaster Risk Reduction states:

> "Climate change is perhaps the greatest global outcome of environmental inequity since it is driven by the emissions that have brought benefits to affluent individuals and societies yet most of the burdens fall on poorer individuals and societies, with developing countries and their poorest citizens being the most vulnerable."

Thus, although Europe will be affected by impacts of climate change its vulnerability is relatively low and its adaptive capacity is quite high when compared with other areas of the world: "The capacity to adapt in Europe is high compared to other world regions, but there are important differences in impacts and in the capacity to respond between and within the European sub-regions." (IPCC, 2014a: 1273)
Figure 14 shows categories of countries according to their disaster-risk management capacity and their ability to manage and cope with future shocks and stresses. The lower the score the poorer the disaster-risk management capacity and the higher the likelihood that disasters cause long-term impacts (Shepherd et al, 2013: 48). The graph clearly shows that Europe and Austria have both, a good disaster risk management capacity as well as a high change of minimising long-term disaster impacts.

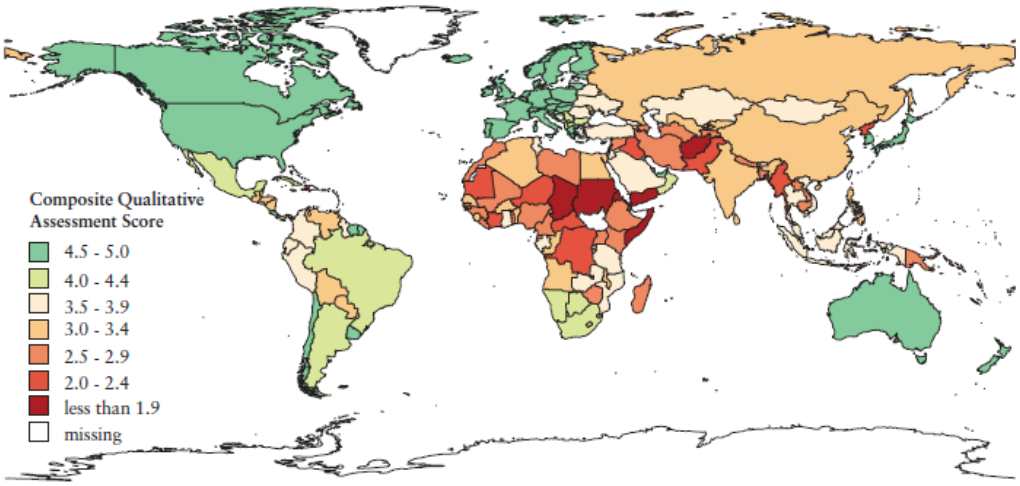

Figure 14 Global map of disaster risk management and adaptive capacity by country. Figure taken from Shepherd et al (2013:48)

- As has been discussed in section F-3.1.2 displacement as a result to sudden onset natural disasters is relatively low in Europe. Figure 9 and 10 that were shown above clearly demonstrate that displacements associated with natural disasters are relatively low compared to disaster displacement in other world regions. Figure 15 shows the ten countries with the highest average annual displacement relating to natural disasters. Nine of the ten countries are in Asia.

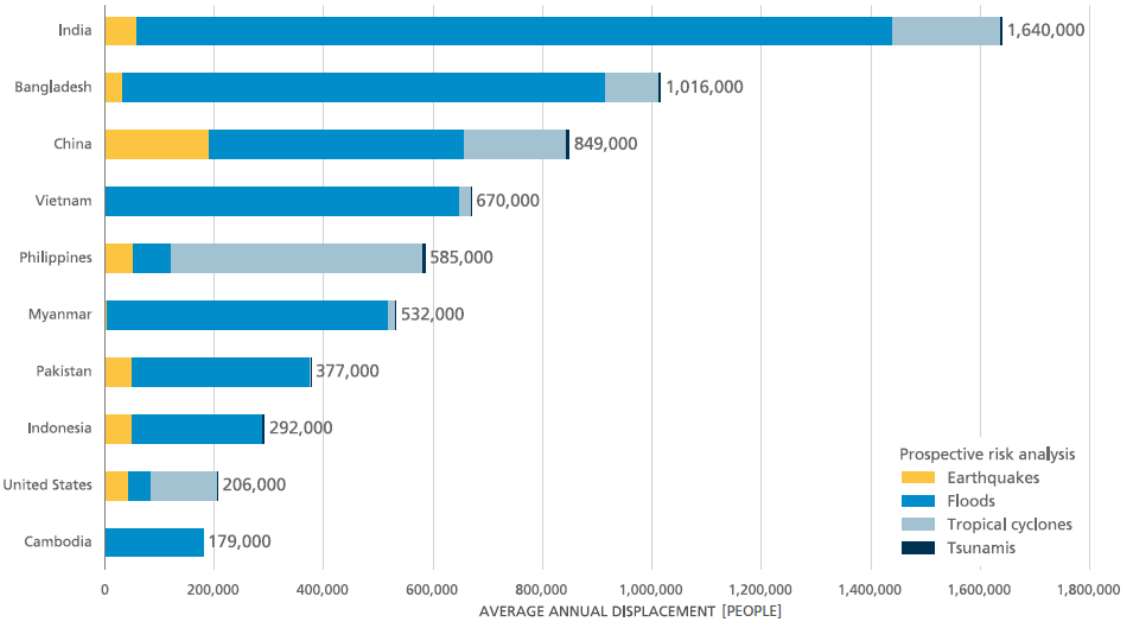

Figure 15 Countries with largest modelled Average Annual Displacement (absolute value) (Figure taken from IDMC; 2017: 45)

- The EACH-FOR project, a two year research project on Environmental Change and Forced Migration Scenarios funded by the European Commission,[7] carried out case studies on several European states including Spain, Russia, Turkey and the Balkans. The case studies show that the environment alone is not conclusive when explaining the interlinkage with migration. Decisive factors that have to be taken into consideration are development dynamics (Spain), development projects such as the buildings of dams and the construction of reservoirs (Russia), water and agricultural mismanagement (Turkey) and a lack of socio-economic perspectives, poverty and unemployment (The Balkans).
- A sub-study carried out in the framework of the FORESIGHT Report focussed on the impacts of environmental change on UK internal migration. The study concludes that environmental factors are of minor importance concerning the motivation to move. Other factors are more decisive: “Putting it rather crudely, when it comes to internal migration, social-system-and-social-system-change, trumps environmental-drivers-and-environmental-change every time.” (Fielding, 2011: S129)
- The FORESIGHT Report has also had a specific focus on southern Europe and the Mediterranean Region. The report concludes that although Southern Europe is very likely be affected by environmental change, this might not be very significant for international migration: “Free movement of labour within the EU already attracts migrants from eastern and southern Europe to the agricultural and food processing sectors in northern Europe. […] Increased drought, famine or threats to agrarian livelihoods may cause outmigration in the Mediterranean, but this outmigration is more likely to represent an acceleration of existing short distance, internal, rural-urban migration.” (Foresight, 2011: 102)

To sum up, although climate change will have an impact on Europe the adaptive capacity of most European countries – including Austria – is very high. Research so far shows, that migration due to environmental change plays a minor role and is very often linked with other

[7] For further information see https://migration.unu.edu/research/migration-and-environment/environmental-change-and-forced-migration-scenarios-each-for-2.html#outline (accessed on 30 May 2017).

factors, such as socio-economic dynamics, resource management or other political, economic and social factors.

F-3.1.6.2 The influx of migrants from non-European countries

Migration towards Europe is a very controversial topic. Public, political and media debate are conveying the narrative of a mass influx of desperate migrants and refugees towards Europe. However, most of these narratives are lacking evidence or are based on false and stereotyped premises. For example, concerning the movement from Africa to Europe Flahaux and De Haas have ascertained by reviewing migration data from the last decades that the common stereotype of Africa as a continent on the move is not sustained by data. Data suggests that intra-African migration has decreased in recent decades. Although African migrants towards Europe has increased "the levels of extra-continental migration are still below those of migration within Africa and remain low for international standards." (Flahaux and De Haas, 2016: 22) There is also no evidence that the share of migrants in the global population has considerably risen over the past decades, as figure 16 demonstrates.

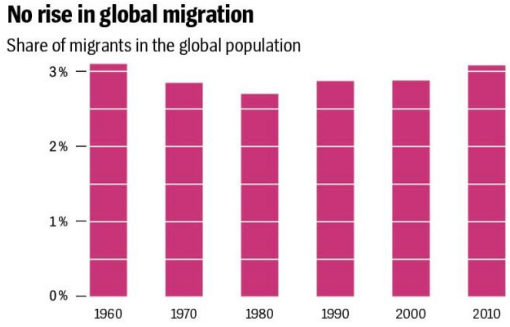

Figure 16 Share of migrants in the global population. Figure taken from De Haas (2017).

The public discussion on the numbers of migrating people in the context of environmental and climate change was and is very often also influenced by wrong premises and, as discussed above, by limited appraisal of the complexity of migration dynamics. In general, the portrayal of people moving in the context of environmental change has to a large extent either be characterised by a victim rhetoric or by the notion of the environmental migrant as a security threat (Ransan-Cooper, Farbotko, McNamara, Thornton and Chevalier, 2015). The first approach framed the environmental migrant as vulnerable persons who are victims to environmental change. The focus in this discussion lies on external humanitarian, legal or financial assistance, "sidelining how mobile people themselves understand their experience" (ibid.: 109). Environmental migrants as a security threat is a widespread topic not only spread by media and politicians but also by international (N)GOs and bodies. A more positive approach is taken by the idea of migration as adaptation; the promises and challenges of this approach were already discussed above. Especially the first and the second approach have found repercussion in the public debate and also resulted in stereotypical and inadequate notions on the dynamics and extent of climate and environmental change and migration.

There is a common understanding that the narrative of a mass influx of migrants in the context of climate change towards Europe is misleading and false. The IPCC notes in its last report:

> "Although several studies have proposed a role for climate change in increasing migration pressures in low- and middle-income countries in the future, there is little robust information regarding the respective roles of climate change, environmental resource depletion, and weather disasters in future inter-continental population movements. The effect of climate change on external migration flows into Europe is highly uncertain […]. Modelling future migration patterns is complex, and so far no robust approaches have been developed." (IPCC, 2014a: 1303)

As indicated above, it is commonly assumed that most movements will be internal migration in countries of origin rather than migrating abroad. Not only in the case of sudden onset dis-

asters but also with regard to slow environmental degradation there is little evidence that climate change will trigger massive international migration in general, also not to Europe (see e.g. de Haas, 2011: S69). As Tamer Afifi has stated with the example of the relationship of droughts and migration in Niger:

> "In general, the 'creeping' environmental migration process is very gradual and rarely ends up in Europe but rather in other African neighbouring countries where the migrants find new means of survival." (Afifi, 2011: e117)

Thus, environmental factors very often seem to exacerbate existing patterns of migration and not create entirely new ones.

Also Geddes argues in his paper on the interactions between climate, migration, and security in the South Mediterranean that although environmental and climate change can affect migration decisions now and in the future, the effects are rather indirect through their impact on other migration drivers (Geddes, 2015: 481). He concludes that the notion of an imminent threat of mass migration from SMPCs[8] is misplaced as international migration is relatively expensive and requires substantial resources. Especially people living from substance-based livelihoods are less likely to have the resources to migrate when affected by drought or famine.

> Thus, environmental change may reinforce the tendency towards shorter-distance migration as opportunities to migrate are generally reduced for those who suffer the impact of environmental change. This means that the effect of environmental change and its interaction with other migration drivers is likely to be a reduction in migration options, and certainly to reduce longer-distance, international migration within the SMPCs and beyond. (Geddes, 2015: 483)

That means, it is not necessarily the poor people that are likely to move (see also the subsection on Trapped Population). As has been highlighted by migration research "the specific relationship between national development and emigration is typically *nonlinear*" (De Haas, 2011: S60). That means, development does not necessarily lead to less migration, it is typically countries with a medium level of development which have the highest trans-Mediterranean emigration rate (Ibid.: S69).

With regard to the Mediterranean region, the Foresight Report emphasises the high degree of uncertainty how the countries in the region will react to a changing environment and how this is interlinked with political, social and economic aspects. The report also stresses that migration in the context of climate change in this region is very likely to be internal migration rather than international. Similar to Geddes the report argues that the reason for this is the high costs that are required for international migration: "People with subsistence-based livelihoods who have been adversely affected by drought or famine are less likely to possess the social, economic and human resources to engage in this form of migration." (Foresight, 2011: 102) The problem is exacerbated by the fact that there is an increasing trend to externalise EU borders, thus, "potential migrants to the EU are increasingly likely to encounter enhanced border controls in southern Mediterranean countries designed to inhibit movement towards the EU." (Ibid.) The EU and its Member States have adopted a restrictive, control-oriented approach towards border control aiming at preventing and containing migration towards the EU (see Mayrhofer and Ammer, 2014: 404, see also Abdelkhaliq, 2010).

To sum up, migration in the context of climate change is very complex phenomenon, there are often multiple factors that are important for the decision to move. Although the migration dynamics in the context of climate change and their relevance for Europe are still not well understood and data in this context is scarce, there is a common understanding that migration will be predominantly occur within the countries of origin and that the consequences for migration towards Europe are highly unsecure. However, that does not mean that there is no

[8] South Mediterranean Partner Countries: Algeria, Egypt, Iraq Israel, Jordan, Libya, Morocco, Palestine, Syria, and Tunisia.

need for action for European governments. Or as IOM has put it: “Making predictions about future numbers is particularly difficult, but it does not negate the need for action.” (IOM, 2014: 37) Indeed, it has been highlighted by the FORESIGHT Report that political non-action may be very risky. It may lead to negative outcomes such as that people may be trapped in dangerous areas, they may lose the choice to stay in certain regions, there might be displacements with geopolitical consequences or migration may be unpredictable and unexpected (Foresight, 2011: 12).

F-4Political measures concerning the interrelation of migration and climate change in the field of adaptation strategies

As already indicated in the beginning, the impact of **climate change is also a human rights issue** and, thus, it is advisable to apply a human rights approach and consider the guarantee of the rights of people in any measure in the context of climate change. The global climate regime has neglected the consideration of human rights for a long time. The 2011 Cancún Agreement mentioned for the first time that climate change has adverse effects on the enjoyment of human rights (United Nations, 2011: Preamble). Only the 2015 Paris Agreement acknowledged that climate change is a common concern of humankind and it emphasised that "Parties should, when taking action to address climate change, respect, promote and consider their respective obligations on human rights, the right to health, the rights of indigenous peoples, local communities, migrants, children, persons with disabilities and people in vulnerable situations and the right to development, as well as gender equality, empowerment of women and intergenerational equity." (United Nations, 2016b: Preamble)

The discussion of migration scenarios above has indicated that they are deeply interlinked with the rights of people that are affected. For example, displacement because of extreme events involves the right to life, the right to adequate housing, the right of property, the right to food or the right to health. Migration associated with slow degradation of the environment effect a broad band of social and economic rights such as the right to food or the right to health, civil rights such as the right to property or the right to life and various cultural rights. UN human rights bodies have repeatedly pointed out **that climate change is deeply related to a broad range of human rights**. In particular, the right to life, the right to adequate food, the right to health, the right to adequate housing, the right to self-determination, the right to development, the right to education, the right to meaningful and informed participation, the right to water and sanitation and the rights of specific groups such as women, children or indigenous people are mentioned in various reports on the relationship between climate change and human rights (see, for example, UNHCR, 2015; United Nations Human Rights Council, 2016 and 2009; United Nations, 2009).

It is important to note, that the necessity for political action in the context of climate change in general and climate change and migration in particular can also be deduced from the **obligations of international cooperation as laid down in international human rights treaties** such as the International Covenant on Economic, Social and Cultural Rights (CESCR), the Convention on the Rights of the Child, the Convention on the Rights of People with Disabilities and the Declaration on the Right to Development. The United Nations Human Rights Council (HRC) has emphasised that "[c]limate change can only be effectively addressed through cooperation of all members of the international community. Moreover, international cooperation is important because the effects and risk of climate change are significantly higher in low-income countries." (United Nations Human Rights Council, 2009: 27) The HRC further stresses that states have not only committed themselves to implement human rights treaties within their jurisdiction but also to contribute to global implementation through international cooperation. In doing so, developed states have a particular responsibility to assist the poorer developing states (Ibid: 28). Furthermore, the Committee on Economic, Social and Cultural Rights identified several extraterritorial obligations to promote and protect economic, social and cultural rights. Hence,

> "States have legal obligations to […] [t]ake steps through international assistance and cooperation, depending on the availability of resources, to facilitate fulfilment of human rights in other countries, including disaster relief, emergency assistance, and assistance to refugees and displaced persons" and to [e]nsure that human rights are given due attention in international agreements and that such agreements do not adversely impact on human rights." (United Nations Human Rights Council, 2009: 28)

Thus, the need for political action is not only due to the fact that non-action is costly and that there is a moral obligation to act as the "heaviest impacts affect people who have contributed

least to the problem and lack the resilience necessary to survive these changes without major harm" (United Nations, 2009: 5). The need for political action is also due to legal obligations in the context of the international human rights framework as well as in the context of the international climate regime.

As already discussed above, adaptation is an important concept and approach in the international climate regime. Adaptation means the reduction of vulnerabilities of communities to impacts of climate changes and may involve migratory as well as non-migratory responses. In the following, some basic ideas will be outlined regarding what policy measures are needed and in what way human rights should be integrated into adaptation policy responses addressing the complex issue of migration in the context of climate change:

- It is recommended that states **acknowledge that migration is a vital adaptation option** and integrate migration as adaptation strategy into environment and climate change policies (see also Melde, lacko and Gemenne, 2017: 87-88). Conceptualizing *migration as an adaptation strategy* means recognizing the fundamental understanding that migration is not a failure to adapt to climate change but part of the solution. From a human rights perspective, this understanding would involve the objective of ensuring the respect of human rights of migrants in all phases of movement as well as providing adequate and comprehensive legal options of (international) labour migration such as temporary and circular labour migration agreements. This would have the effect that migrants do not have to resort to unsafe ways of movement, such as trafficking or smuggling, which not only endangers their lives but also makes them vulnerable to various forms of exploitation.
- In order to **guarantee the human rights of migrant workers**, it is advisable that all states adopt the *International Convention on the Protection of the Rights of All Migrant Workers and Members of Their Families*.
- Furthermore, it is important to ensure the **protection of internationally as well as internally displaced persons due to extreme weather events**. The Nansen Initiative[9] has collected valuable practices and recommendations in this regard (The Nansen Initiative, 2015). In general, the Initiative calls on states to ensure "increased preparedness, solidarity and cooperation by States, (sub-)regional organizations and the international community to prevent, avoid, and respond to disaster displacement and its causes" (Ibid.: I-II).
  Concerning the protection of internally displaced persons the Nansen Initiative refers to the UN Guiding Principle on Internal Displacement as the most important framework for the protection of IDPs. With regard to internationally displaced persons the Initiative recommends a range of measures involving the admittance of such persons into the territory of other states or refraining from returning persons to a disaster-affected country. The Nansen initiative identifies the collection of data and enhancement of knowledge, then enhancement of the use of humanitarian protection measures and the strengthening of the management of disaster displacement risk in the country of origin as priority areas for future action (see box).

The tree priority areas for future action according to the Nansen Initiative (2015: 10):

1. **Collecting data and enhancing knowledge** on cross-border disaster-displacement;

[9] The Nansen Initiative is a government-funded process "intended to identify effective practices and build consensus on key principles and elements to address the protection and assistance needs of persons displaced across borders in the context of disasters, including the adverse effects of climate change" (The Nansen Initiative, 2015: I).

2. **Enhancing the use of humanitarian protection measures** for cross-border disaster-displaced persons, including mechanisms for lasting solutions, for instance by harmonizing approaches at (sub-)regional levels;

3. **Strengthening the management of disaster displacement risk in the country of origin** by:

A. Integrating human mobility within disaster risk reduction and climate change adaptation strategies, and other relevant development processes;

B. Facilitating migration with dignity as a potentially positive way to cope with the effects of natural hazards and climate change;

C. Improving the use of planned relocation as preventative or responsive measure to disaster risk and displacement;

D. Ensuring that the needs of IDPs displaced in disaster situations are specifically addressed by relevant laws and policies on disaster risk management or internal displacement.

- European states should commit themselves to work towards **integrating migration considerations and strategies as well as human rights in international climate change policies**.[10] In addition, European states should make a clear effort to comply with the commitment laid down in the Paris agreement to respect, promote and consider their obligations on human rights that when taking action to address climate change (including all adaptation measures). It is vital to acknowledge the importance of human rights for all climate change policies and integrate human rights safeguards in the international climate change regime. [11]
- There are a broad range of non-migratory adaptation strategies. From a human rights perspective it would be recommendable to **address and decrease vulnerabilities by enhancing and ensuring all human rights** (particularly social and economic rights) **especially in countries that are mostly effected by negative impacts of climate change**. Measures in this regard might include poverty-reduction programmes, education and training programmes, strengthening disaster management plans and supporting the development and managing of early warning systems, development policies aiming at the strengthening of people particularly vulnerable to the impact of climate change and, in general, information campaigns on potential risks and ways of capacity building. In particular, European states should support building "adaptive capacities in vulnerable communities, including by recognizing the manner in which factors such as discrimination, and disparities in education and health affect climate vulnerability, and by devoting adequate resources to the realization of the economic, social and cultural rights of all persons, particularly those facing the greatest risks." (UNHCR, 2015: 2)
- Such initiatives could include the support of countries in **strengthening National Adaptation Programmes** (see Melde, Laczko and Gemenne, 2017: 88) In this context, it would be vital to integrate human rights obligations and safeguards in National Adaptation Plans and Disaster Management Plans, while guaranteeing the participation of affected persons as well as civil society organisations at all levels.
- A very crucial point is, as pointed out by the United Nations Office of the High Commissioner for Human Rights, the **provision of maximum available resources for sustainable, human rights based development**. In doing so, states would comply

[10] See, for example, the *Submission of the Office of the High Commissioner for Human Rights to the 21st Conference of the Parties to the United Nations Framework Convention on Climate Change* (UNHCR, 2015);

[11] For detailed recommendations in this regard see Hofbauer, Mayrhofer, Mersmann and Schade (2016).

> with their duties under international human rights law and, thus, be able to prevent or minimize human rights harm. (UNHCR, 2015: 2)

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