

# Climate Change, Migration, and Displacement

The Underestimated Disaster



## A study commissioned by Greenpeace Germany.



Universität Hamburg

DER FORSCHUNG | DER LEHRE | DER BILDUNG

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# Foreword

Our climate is changing around the globe. This process is advancing ever more rapidly, more visibly and more alarmingly. 2016 was the world's hottest year since record keeping began, and the third consecutive year of record warmth. The average global temperature was 1.1 degrees Celsius higher than temperatures before the beginning of the industrial age, which implies that the increase in average temperatures is actually much higher in some parts of the world. Record temperatures have been accompanied by a rise in sea levels, by sudden natural disasters, and by other gradual but steadily increasing changes.

Weather patterns have been thrown off kilter in many places around the world. Older generations in Central Europe are well aware of this, although severe consequences are (still) relatively rare here, but the situation is already much more dramatic in other parts of the globe. Climate change is contributing to an increase in extreme weather events and weather-related natural disasters. More and more people are losing their life support base and being forced to leave their homes and migrate elsewhere. Climate change and environmental degradation are much stronger drivers of migration flows today than many of us may realize.

At the same time, the issue of flight and migration is high on Europe's agenda. Aid organizations recorded distressing figures for 2016, with some 5.000 people dying on dangerous crossings to Europe in often unseaworthy boats. The number of unreported deaths may well be much higher. To even reach the southern shores of the Mediterranean, many migrants have already faced hardship for months or even years. The number of people who lose their lives along the way is not recorded, but it is estimated that each year, this figure equals the number of people who drown in the Mediterranean.

What at first glance appears to be simple causality – climate change leading to more and more migration – has triggered intense academic debate over the past ten years because the circumstances are complex. There is need for a thorough analysis in the ground between denying the problem and asserting immediate causality. In international relations, migration induced by climate change and environmental degradation is increasingly recognized as a problem, whether in the framework of international climate policy, international migration policy, development cooperation, or international crisis management. But considering the dimension of these major challenges, only small steps have been taken so far. The scope of the problem continues to be underestimated. Climate change is jeopardizing the livelihoods of more and more people. It is a risk multiplier. Although understanding of the connection between climate change and migration has increased, many questions have yet to be answered. We need more knowledge to better support the people affected.

Taking in migrants escaping environmental degradation is a matter of justice and solidarity. The countries and social groups in the Global South, which are particularly vulnerable to the consequences of climate change, have contributed the least to global warming. Therefore, the countries in the Global North are under the immediate obligation to multiply their efforts to accelerate the transition from fossil fuels to renewable energies.

When ten years ago – at the time in another team together with Chris Methmann – we compiled a study for Greenpeace titled “Climate Refugees: The Denied Disaster”, we wrote a sentence at the end of the foreword which stated: “Nothing will remain as it was!” Looking back today, this comment was a prophecy, but it also shows that (nearly) ten years have been wasted. Although very few people today deny the reality of this looming disaster – and it is bad enough that these people are (again) in the White House – there are still too many people who underestimate the problem. This study intends to contribute to a better understanding of the complex relationships between climate change, environmental degradation and migration, and provide insight into current research as well as political initiatives.

Time is running out. We can no longer afford to underestimate the disaster taking place before our eyes around the world.

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# Abbreviations

<b>AU</b>	African Union
<b>BMZ</b>	Bundesministerium für wirtschaftliche Zusammenarbeit und Entwicklung (German Development Ministry)
<b>CRRF</b>	Comprehensive Refugee Response Framework
<b>EPA</b>	Environmental Protection Agency
<b>EPAs</b>	Economic Partnership Agreements
<b>GCF</b>	Green Climate Fund
<b>GFMD</b>	Global Forum on Migration and Development
<b>IDMC</b>	Internal Displacement Monitoring Centre
<b>IOM</b>	International Organization for Migration
<b>IPCC</b>	Intergovernmental Panel on Climate Change
<b>MDG</b>	Millennium Development Goals
<b>NGO</b>	Non-Governmental Organization
<b>NRC</b>	Norwegian Research Council
<b>SDG</b>	Sustainable Development Goals
<b>SFRR</b>	Sendai Framework for Disaster Relief Reduction
<b>UNDP</b>	United Nations Development Programme
<b>UNFCCC</b>	United Nations Framework Convention on Climate Change
<b>UNHCR</b>	United Nations High Commissioner for Refugees
<b>WFP</b>	World Food Programme (of the United Nations)

# 1. Introduction

The risk to humans of being displaced through sudden natural disasters is 60 percent higher today than it was forty years ago.<sup>1</sup> Today an average of 25.4 million people is displaced every year as a consequence of natural disasters.<sup>2</sup> Climate change contributes to the increase in extreme weather events and weather-related natural disasters, and to the increasing number of people who lose their life support base and are forced to flee their homes and migrate to other places. Climate change and environmental degradation are already much stronger drivers of migration flows than many of us may be aware of. This study intends to contribute to a better understanding of the complex relationships between climate change, environmental degradation and migration, and provide insight into current research as well as political initiatives. It also intends to counter some widespread misperceptions.

The climatic and environmental factors driving migration are often ignored because it is difficult to isolate them from other motives. Climate and migration researchers therefore attempt to investigate climatic and environmental factors in differentiated ways and to explore and reveal the many ways in which they are connected to other factors. Climate change and environmental degradation are multipliers of additional problems and crises that lead to displacement and migration. The more differentiated our understanding of complex contexts is, the better governments and society can prepare for these challenges and support the people affected.

The correlations between climate change and environmental destruction are already complex. The International Organization for Migration (IOM), outlining the links between climate change, environmental changes and migration, has derived the concept of environmental migration now used more and more frequently: climate change leads to environmental degradation, to which other factors, such as the excessive use of natural resources, also contribute. Environmental degradation destroys people's livelihoods and increasingly exposes them to the risk of natural disasters. Therefore, the link between climate change and migration is environmental degradation. As climate change progresses, environmental destruction increases, as does the pressure to migrate. The working definition of environmental migrants used by the IOM describes them as "persons or groups of persons who, predominantly for 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."<sup>3</sup> Since this study intends to explore the climate change factor, we will use the term environmental migration.

We will differentiate between two types of environmental migration. On one hand, there is migration due to sudden natural disasters such as floods, storms, heat waves, or forest and bush fires. On the other hand, migration is linked to gradual changes in the environment such as rising sea levels or drought. Moreover, measures to mitigate climate change or to adapt to it also lead to climate-related displacement.

As yet, no comprehensive data have been compiled describing how many people have been forced to migrate as a consequence of climate change. Figures circulating now are often alarmist or

questionable.<sup>4</sup> Many migration flows are undocumented and their cause cannot be determined with any accuracy. Data on migration due to sudden disasters are significantly better than data on migration due to gradual changes in the environment. Since 2008, the Internal Displacement Monitoring Centre (IDMC) has been compiling, evaluating and publishing data from around the world on the group of environmental migrants responding to sudden disaster. The data of the IDMC are based on information provided by national and local governments, international and transnational organizations, non-governmental organizations, and the media in connection with displacement due to disasters. These estimates do not include further migration flows or the return of displaced people to their homes. As this snapshot of the situation does not generally address the question of whether migrants have crossed a border, and a large part of this group remains within national borders, the IDMC speaks of internally displaced persons as a consequence of natural disasters. Literature on the issue commonly uses the term disaster victims. Climate scientists are particularly interested in the large share of refugees who are internally displaced persons migrating as a result of sudden weather-related natural disasters.

Various approaches are used to investigate when people leave their home country in individual areas because of gradual changes in the environment. These approaches include interviews with the groups affected, the evaluation of statistics on population numbers and occupational groups, and the evaluation of mobile phone data. Additionally, there are complex computer-assisted research projects. For example, high-resolution satellite data on the surface expansion of cities are linked to official statistics and detailed weather data over a long period of time. This allows researchers to develop theories on the connection between extreme heat and drought periods and population movements.<sup>5</sup> It is not possible to make global estimates of how many people leave their homes due to gradual environmental change.

Until now, migration induced by climate change and environmental degradation has been thought to intensify generally observable trends in migration.<sup>6</sup> Contrary to what the political debate in Germany implies, the major share of migration around the world takes place within national borders. This also applies to environmental migration. Border crossings are increasing only in areas affected by environmental change and natural disasters that are close to a border. Migration from rural areas to cities and urban centers is especially high. Another trend, which began about forty years ago, has been migration from mountainous and dry regions to coastal regions. Because many urban centers are located along coasts, these trends overlap. Migration is defined as a relatively permanent relocation of residence over a certain period of time, between specific political or statistical entities, or between different kinds of residence (such as rural area/city or mountain/coast).<sup>7</sup>

In the meantime, the IOM and the Intergovernmental Panel on Climate Change (IPCC) advise against using the term climate refugee because it raises false expectations. The Convention Relating to the Status of Refugees or 1951 Refugee Convention applies only to persons fleeing across borders to escape conflict or persecution. The situation for environmental migrants is different, as Walter Kälin of the Platform on Disaster Displacement,

1 IDMC 2016d

2 IDMC 2016d

3 Ionesco et al. 2017 and Smith 2012

4 Jakobeit and Methmann 2012

5 Gray et al. 2016

6 IPCC 2014

7 Brown et al. 2016, p. 91

formerly the Nansen Initiative, points out: “Internally displaced persons remain subject to the laws of their state, where many guarantees of human rights are applicable. If, on the other hand, people cross the borders of their state, there is a gap in protection. Very few cases fall under the definition of refugee in the sense of the Geneva Convention, and therefore it remains open whether countries where refuge is being sought can be obliged to accept them. The concept of climate refugees also makes little sense because scientists are not able to prove a direct causal relationship between a particular weather event and climate change. They can only identify trends, a certain increase in the frequency and intensity of such weather disasters. In short, the term climate refugee does not help those affected; they could easily be denied protection by arguing that the specific link between climate change and flight cannot be proven. For this reason, we at the Nansen Initiative do not use the term climate refugee, but speak of disaster victims.”<sup>8</sup>

At present, an important issue in legal research on climate change is to explore how the gap in protection can be closed for people who migrate due to environmental changes or natural disasters. Research on climate change and migration has expanded enormously and become differentiated in the past ten years. Understanding of the reasons, dynamics, and extent of migration has improved, and yet many questions remain unanswered. Many research projects and political initiatives are based on a common understanding and goal—that migration is an important step in adapting to climate change. The common objective is to provide better support to particularly vulnerable population groups and to migrants fleeing the effects of climate change and environmental degradation. The aim is to boost the resilience of people in vulnerable areas to prevent unwanted migration and to enable desired migration. One focus of current research is to find out which opportunities migration offers to both

the communities and states losing their populations and the communities and states taking in migrants. Researchers are making efforts to overcome the widespread image of migrants as threatening or passive victims. “Societies affected by climate change are societal actors who actively shape and change their life circumstances to find common solutions. A constructive approach strengthens the positive interrelationships between migration, human development, and adaptation to climate change.”<sup>9</sup>

A special right to protection for environmental migrants is substantiated in the context of justice and human rights. Floods, storms, drought and famine can deprive people of their basic rights: the rights to life, personal freedom and security, food, housing, water, health, and education. This makes environmental migration part of the human rights debate. Those countries and social groups which have contributed the least to global warming will continue to be especially vulnerable to the effects of climate change. Providing highly affected populations and migrants with substantial support can be understood as a first step toward more climate justice.

The following chapter outlines several general observations and assumptions on environmental migration research. It explains a conventional formula: “risk = extreme natural event or environmental destruction x exposure x vulnerability.” It also discusses how, at the family level, decisions are made to stay or leave. The third chapter begins by focusing on the relationship between natural disasters and migration, presenting the results of IDMC estimates, followed by a description of gradual changes in the natural environment affecting migration. In the fourth chapter we will use individual examples to explore various topics in regions that are particularly hard hit by climate change. The fifth chapter presents political approaches to adaptation and solutions. The summary draws conclusions and lists our recommendations to various actors.

## 2. Climate Change, Migration Patterns, and Decisions on Migration

### 2.1. Climate change, natural disasters, and migration

Our Earth is a complex system of interconnected geophysical, meteorological and climatological processes which change environmental and climatic conditions through both sudden and low-onset events. Archeological research has shown that environmental and climatic changes in recent millennia have always been an important driver of human migration. The first large cities in Egypt and Mesopotamia arose when people were driven by climatic and environmental changes to settle near rivers and human life had to be reorganized to accommodate high population densities.<sup>10</sup>

Climate change in the past was the result of natural processes. Today, human activity is also causing global climate change which

is advancing rapidly and threatening to destroy our natural life support base. The increasing influence of humans on the world’s changing climate system began with industrialization. Transportation systems and industries that rely on the burning of fossil fuels, and the intensification of agriculture, release so much carbon dioxide, methane, and other greenhouse gases into the atmosphere that too much solar heat is absorbed and cannot be radiated back into the atmosphere. Land surface and sea temperatures are rising, and the planet’s climate is increasingly undergoing changes. Sinks, which could absorb greenhouse gases, are not plentiful. Forests that acted as sinks were decimated centuries ago, especially in Europe, and those remaining continue to be felled today. The oceans are still important sinks, but their absorption capacity is limited by

8 Kálin 2016

9 Scheffran 2015

10 IOM 2008

acidification, warming, and pollution. The existence of human-induced climate change is undisputed among climate scientists. Climate change is leading to the global warming of the atmosphere and oceans, a change in precipitation patterns, the melting of glaciers and permafrost soils, a rise in sea levels and ocean

acidification; it also increases the intensity and frequency of extreme weather events such as storms and heat waves. These changes are disrupting ecological, social and economic systems to an ever greater extent..

## The differences between weather and climate and between extreme weather events and natural disasters

### Weather:

The weather is the state of the atmosphere at a certain time in a particular place. It is characterized by the meteorological elements of sunshine, air pressure, air temperature, humidity, and wind, which determine cloudiness and precipitation.

### Climate:

The climate is the average weather over a longer period such as several decades or even longer. For example, continental climates can be distinguished from maritime climates, and (regional or global) climates can be distinguished from each other by weather that varies with the seasons.

### From extreme weather event to natural disaster:

The extent to which an extreme natural event (such as a flood, storm, landslide, heat wave or volcanic eruption) proves to be catastrophic depends on the degree to which people are exposed to it, whether it destroys their livelihoods and infrastructure, and how well the people affected are prepared for the disaster and can protect themselves.

Compared to the pre-industrial age, the average global temperature today has risen by some 0.89 degrees Celsius.<sup>11</sup> The last three years have been the warmest on record. CO<sub>2</sub> levels in the atmosphere are significantly higher now than at the beginning of industrialization and they have not been this high for at least 800,000 years.<sup>12</sup> At the 2015 United Nations Climate Change Conference in Paris, the community of nations decided to limit the rise in temperature to well below 2 degrees Celsius above pre-industrial levels. To reach this goal, most coal, gas and oil reserves must stay in the ground, and great efforts must be made to transition into a post-fossil era. Many experts fear that we will fail to meet this goal and are heading toward a life-threatening loss of ecosystems, the flooding of coastal urban areas, and a further increase in extreme weather events. Global warming can cause a tipping point to be reached that will trigger chain reactions, leading to global instability and severely threatening the survival of many people. To prevent or reduce dramatic changes, we must take decisive measures to combat human-induced climate change at all levels.

Apart from the anthropogenic greenhouse effect, the climate will of course continue to be affected by natural fluctuations within the climate system itself. The most significant natural fluctuation is the El Niño phenomenon, which causes both unusually heavy precipitation and severe drought conditions. Especially in 2017, an El Niño exacerbated drought in Africa to a devastating degree, in a region already suffering from the consequences of climate change. How the El Niño phenomenon will itself react to global warming is the subject of intense climate research. Many scientists assume that there will be a trend toward more extreme El Niño events in the twenty-first century.

The effects of human-induced climate change are already being felt across the globe. As we will illustrate in the next chapter, most

regions experience short-term evacuations and temporary or permanent migrations that are closely linked to extreme weather conditions and climatic changes. Climate change is indeed a push factor for migration and flight. As the human-induced greenhouse effect continues to progress, we can expect that climate change will increasingly affect people's living conditions and become an increasingly important push factor for migration flows.

Most migration is only a temporary or seasonal adaptation strategy in response to climatic and economic conditions. Sudden disasters often force whole population groups to precipitous, often short-term flight. Most refugees return to their homes as soon as possible and become involved in reconstruction. Especially in developing countries, natural disasters unleash a vicious circle of increasing impoverishment and vulnerability to further natural disasters. Each disaster leads to more poverty, and people lose their ability to protect themselves from the next natural disaster. By contrast, migration as a consequence of gradual change often shows a different pattern. It is less abrupt and at first glance is not often seen as a result of environmental and climatic changes.

The risk of being displaced by a sudden natural disaster is already 60 percent higher today than it was forty years ago.<sup>13</sup> The Internal Displacement Monitoring Centre (IDMC) has arrived at this conclusion based on a differentiated analysis of country-specific data. This alarming development is explained in the following formula:

**Risk = extreme natural event or environmental destruction x exposure x vulnerability<sup>14</sup>**

Risk can be determined by three related factors: the extreme natural event or environmental destruction itself, the degree to which humans are exposed to this event (exposure), and the ability

11 Ionesco et al. 2017

12 Latif 2012

13 IDMC 2016, p. 9

14 Ginnetti et al. 2015



or inability of people to protect themselves from the event (vulnerability). Exposure has greatly increased. Compared to forty years ago, many more people today live in areas where they are exposed to floods, extreme storms, extreme heat and drought or where the environment has suffered degradation. Increasing relocation is explained by population growth and progressive urbanization with more and more construction on riverbanks and coastal areas; and by growing land consumption which is part of the dominant model of economic development. A large share of the human population in threatened areas is highly vulnerable. The Netherlands is an example of a region with high exposure but low vulnerability. Its geographic location in a river delta makes the Netherlands particularly vulnerable to flooding. But dikes and modern technologies for flood protection have significantly reduced this vulnerability so that its population lives much more safely than populations in other river deltas in other parts of the world.

What role does climate change have in the development of risks? Global warming exacerbates all three risk factors. Climate change increases the intensity and frequency of extreme weather events and contributes to the destruction of people's natural life support base, which has already been depleted by the overexploitation of natural resources. These extreme weather events include higher temperatures, drought, and rising sea levels which flood coastal areas contaminate soil and groundwater with

salt. Climate change is also a driver of expanding urbanization, which in turn carries additional risks and often further weakens already vulnerable people and communities.

The risk of climate-related displacement is particularly high in countries that are especially affected by negative consequences (exposure) and do not have the capacity or resources to prepare for climate change (low adaptive capacity and low resilience). High-density populations in particularly vulnerable regions make the situation even worse. So far, most of the migration due to climate, weather and environment has taken place within developing countries whose capacity to protect their populations is limited. In developing countries, the poorest people are the ones who are the most vulnerable, who have to live in risk areas, and who cannot protect themselves. Those people who contribute the least to global greenhouse gas emissions are the most severely affected by the consequences of climate change.

Environmental and climate-related migration intensifies general migration trends. Most migration takes place in developing countries and most migrants remain inside their own country's borders (internally displaced persons). Border crossings increase only in border areas. Migration is especially high from rural areas to cities and urban centers. Another trend in the past forty years has been migration from mountainous and dry regions to coastal areas.<sup>15</sup> These two trends overlap because many urban centers are located in coastal regions.



Nepal, August 2013

## Types of human migration induced by climate change, environmental degradation, and natural disasters

### Displacement:

Displacement denotes the forced abandonment of a person's home.

### Migration:

In contrast to displacement, migration induced by climate change or environmental degradation implies that migrants have a degree of freedom in deciding on the timing, duration, and destination of their migration. The term "migration" is also used as a general term to describe a more or less voluntary departure.

### Planned relocation:

This term denotes a resettlement imposed by unsustainable circumstances or by order of a national or local authority.

**Trapped populations:** This term describes population groups whose livelihoods have been destroyed, or who are exposed to enormous risks but do not have the resources to migrate, or for whom escape routes and places of refuge have been denied, meaning they therefore lack the means to flee or migrate.

### Climate-induced migration:

This term is hardly used any more in academic discussion. Anyone who has left the habitual place of residence only because of environmental or climatic changes does not belong to the group of persons legally defined as refugees in the Convention Relating to the Status of Refugees or 1951 Refugee Convention. The convention defines a refugee as a person who is escaping war and conflict, or who is persecuted because of race, religion, nationality, belonging to a particular social group, or political convictions; the term therefore does not apply. Moreover, this term creates the impression that environmental reasons (push factors) for migration can be clearly separated from other reasons (factors) that contribute or bring about natural disasters and environmental degradation.

It appears that the line between migration and displacement as a consequence of natural disasters, climate change and environmental degradation is fluid. More or less voluntary migration can serve to avoid later displacement, resettlement or even forced immobility. Forced immobility becomes a humanitarian crisis when external aid no longer reaches the trapped population. The other forms of mobility mentioned above also have a huge impact on people and societies; they must leave their traditional communities, they lose their land, their work, their property and in some cases, even part of their own culture.

## 2.2. Households and individuals decide whether to stay or leave

The reasons for flight and migration are complex. Researchers have shown that migration is usually based on decisions made by households and individuals who are influenced in turn by many (often interconnected) push and pull factors.<sup>16</sup> These decisions are often not voluntary, but attempts to ensure survival, escape extreme poverty, to live in dignity, or flee from violence, persecution and war. In some African states, entire villages will pool the means for travel and decide together which member of the village should migrate to later support the community with remittances, invitations for visa applications, and the like. It is almost impossible for the individuals selected to oppose this collective decision because they and their families would otherwise become isolated in the community.

The diagram illustrates the complexity of decisions regarding migration. Factors on three different levels influence the decision to stay or leave. At the macro-level, changes in politics, economics, society, environment, demographics and land use, as well as conflicts and war, play a role. Although each of these factors can

be the most important driver of migration, people often decide to leave their home or stay when changes in several of these areas coincide. Changes in one area affect other areas, potentially causing the overall situation of inhabitants to greatly deteriorate (or improve). If climate change continues to advance, worsening or even destroying the livelihoods of more and more people, it will become a more significant factor. Of key importance, of course, is whether the targeted region or country will even permit entry and residence.

Specific contexts (meso-level in the diagram) also contribute to decisions on migration. Social networks in the homeland and in the diaspora can act both as drivers or inhibitors of migration. Agencies for recruiting workers outside the region simplify migration. Measures to adapt to climate change, such as local protection programs against hurricanes/cyclones or floods, and aid for post-disaster construction, can persuade people to stay or return. Not least, the costs of migration are crucial for deciding whether people can undertake the journey at all.

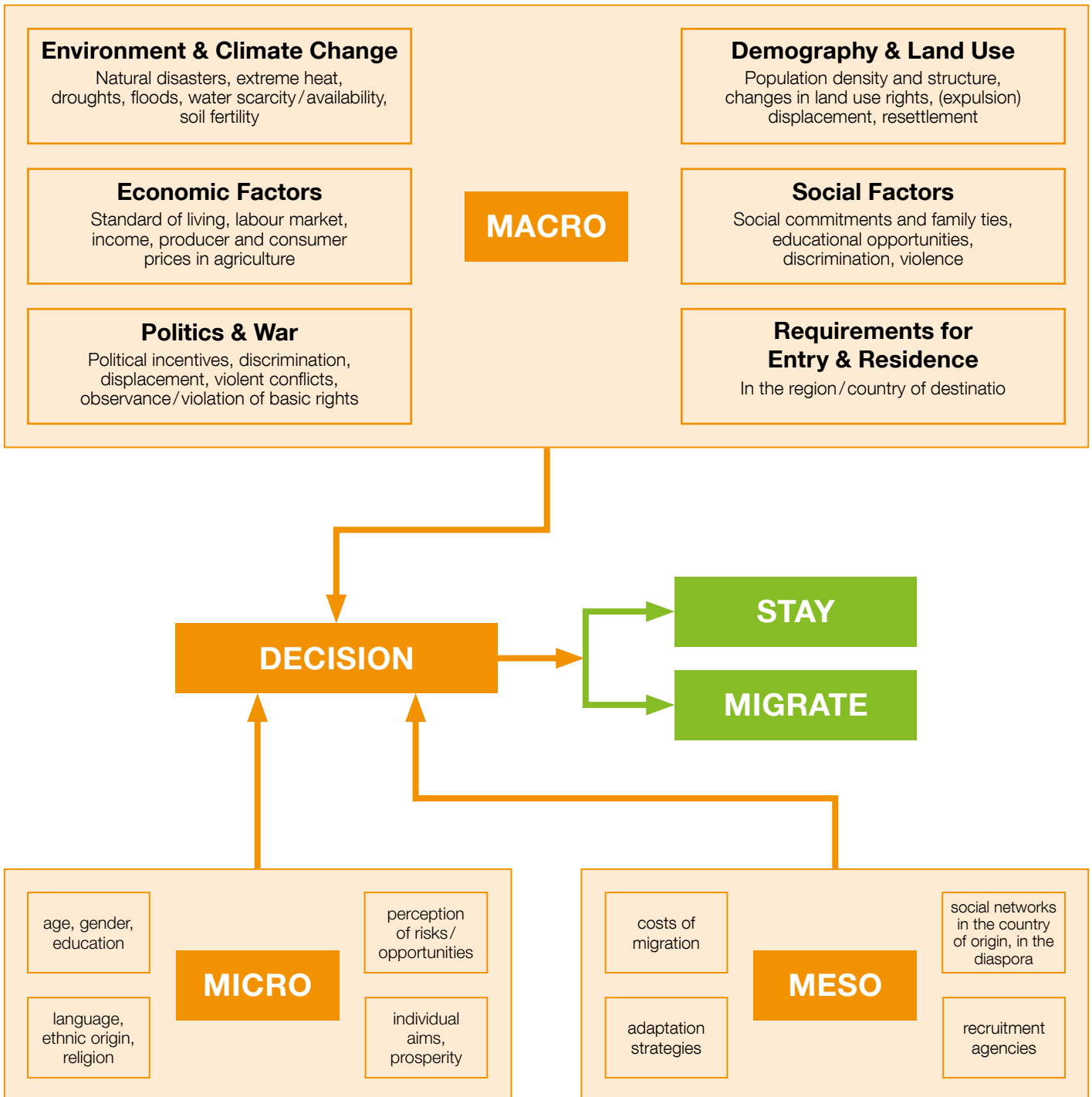
Poverty can be a driver of, or an obstacle to migration. The search for better livelihoods motivates people to migrate, but poor

<sup>16</sup> This means, on one hand, the pressure to migrate, and on the other hand, the incentive to migrate.

people in particular do not often have the financial means to do so. On the micro-level, it is not only prosperity/poverty and individual goals that play a role, but many other factors as well, such as language, ethnicity, religion, age, gender and education. The extent to which decision makers are informed about dangers, risks and opportunities is also of great importance. Many migrants and communities sending off a village member do not seem to know how dangerous it is to cross the Sahara and the Mediterranean,

and how radically Europe is closing its doors to refugees. Research based on interviews has shown that island inhabitants in the South Pacific are not necessarily well-informed about the consequences of climate change. To be able to plan their lives, it is essential that islanders be aware that sea levels will continue to rise. To fill this gap in knowledge, Fiji has now introduced climate change as a subject at school.

**The complexity of decisions regarding migration**



Source: Own diagram, adapted from the UK Government Office for Science 2011 (Foresight Report).

# 3. Causes of Migration Due to Climate and Environmental Factors

## 3.1. Displacement and migration through sudden natural disasters such as floods, storms, landslides, and forest and bush fires

In climate research, there is general agreement that climate change has been responsible for many extreme weather events in recent years and that these events will continue to increase greatly as average global temperatures rise.<sup>17</sup> Climate scientists have identified a connection between global warming and the frequency and growing intensity of precipitation as well as changes in precipitation patterns. During the second half of the twentieth century, many regions already experienced these increases and changes in precipitation in the form of severe floods and wet landslides.

Glacial melt and rising sea levels are exacerbating the situation in many areas. Melting glaciers increase the volume of water in the oceans. Rising sea levels mean that water flows back into rivers, slowing down the outflow of water and prolonging the duration of floods. Winds and storms are also influenced by global warming.<sup>18</sup> The surface temperature of the oceans is an important factor in the development of storms, for example. Ocean warming can be one of the factors contributing to the development of particularly heavy tropical storms. Although the situation varies from year to year, heavy storms have increased in intensity and frequency since the 1970s. Global warming also contributes to heat waves and droughts, which in turn increase the risk of forest and bush fires.<sup>19</sup>

However, floods, wet landslides and forest fires cannot often be attributed solely to climate and weather conditions. There are other events which can hardly be linked to climate change because they have been generated by human error alone. Humans bear great responsibility when any construction in floodplains and along riverbanks induces landslides or increases the flow rate of a river and raises its water levels. How far a forest or bush fire can spread also greatly depends on the strategies and capacities of the people combating the fire. It is always important to investigate the human factor in any natural disaster to prevent further disasters. There are many situations in which climate conditions and other environmental factors are so closely interrelated with human error that it is not easy to see the extent to which any one of these factors is decisive.

But the complexity of disasters must not allow us to underestimate the consequences of climate change and the enormous risks posed by further global warming. The climate and weather-related natural disasters we are experiencing today are already considered to be a result of climate change, giving us an idea of what can be expected to a far greater extent if greenhouse gas emissions are not largely reduced.

Estimates by the IDMC regarding the number of persons displaced by sudden natural disasters are alarming. Statistics compiled by the IDMC between 2008 and 2015 show that an average of 25.4 million people were displaced by natural disasters each year.<sup>20</sup> This figure is more than double the number of people displaced due to conflicts and violence. This statistic may be

surprising, given that war refugees are currently receiving a great deal of media attention. So far, the IDMC has not been able to determine the total number of persons displaced by natural disasters in the long term because displacement is often followed by a wide range of migration flows, and it is becoming increasingly difficult to identify people.<sup>21</sup>

## IDMC estimates on the number of internally displaced persons

Some 27.8 million people were displaced in 2015 alone. This figure includes 19.2 million people displaced due to natural disasters in 113 countries and 8.6 million people displaced due to conflicts and violence in 28 countries.



Floods in Thailand, Nonthaburi province, October 2011

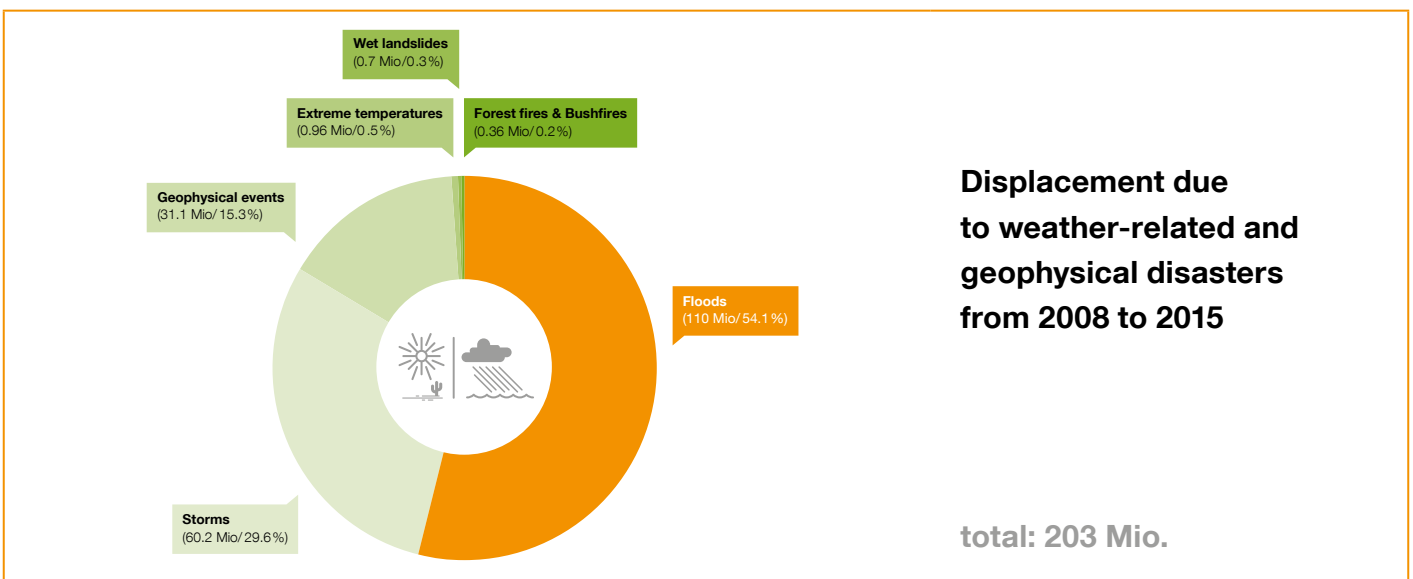
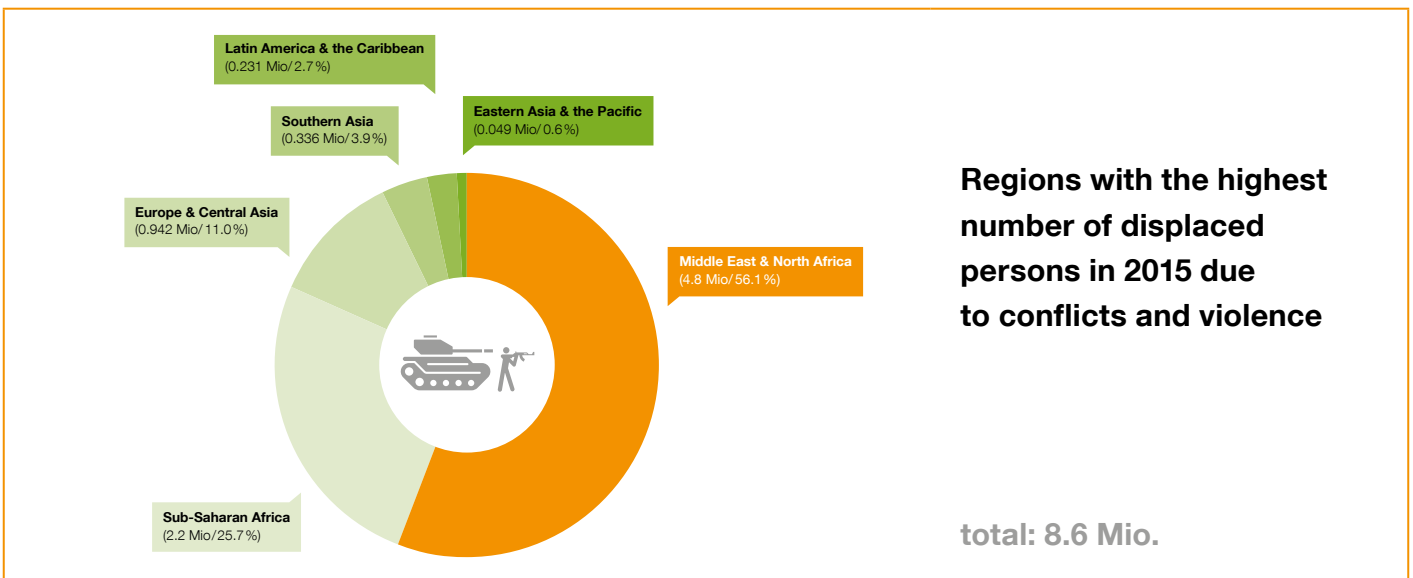
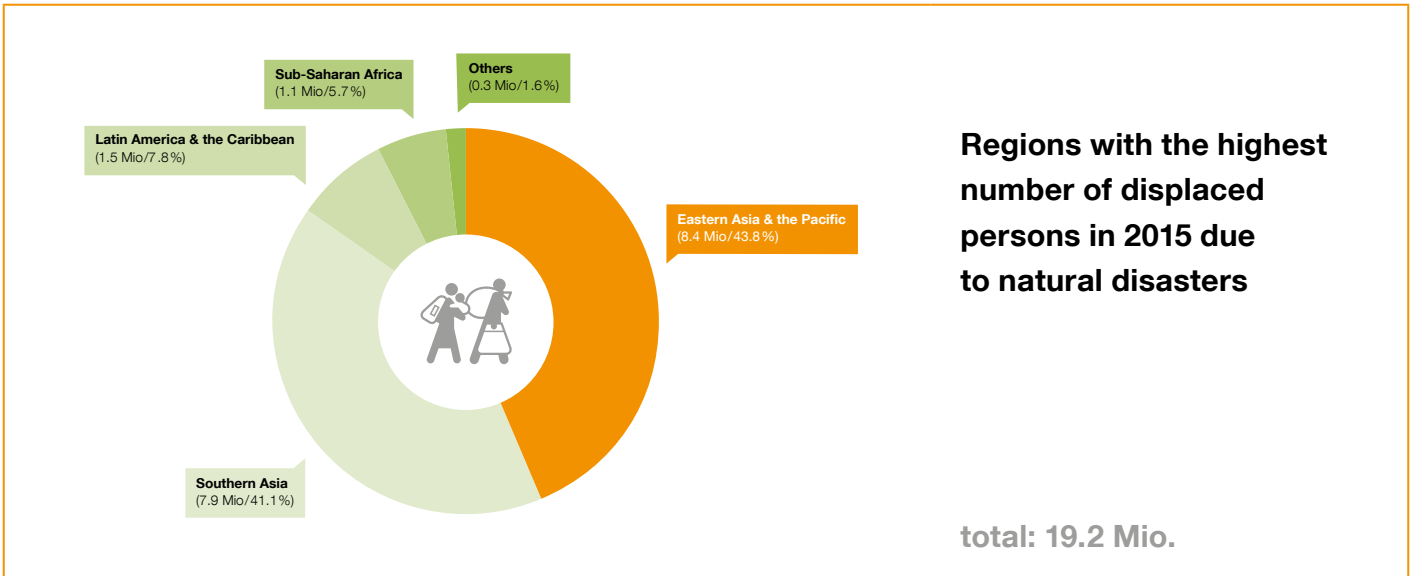
17 IPCC 2014

18 IPCC 2014 and Geophysical Fluid Dynamics Laboratory 2016

19 IPCC 2014

20 IDMC 2016

21 The data contain statistics only for short-term internally displaced persons, not for further migration or the return of refugees to their homes. Data also do not include the hundreds of thousands of displaced persons who live in refugee camps or informal settlements for a very long time. Likewise, people who have left their homes due to minor natural disasters, but who do not appear in the statistics of their own countries, are not included in the data.



Sudden natural disasters are differentiated into geophysical disasters (earthquakes and volcanic eruptions), and climate and weather-related disasters. The major share of displacement is due to climate and weather-related disasters, with an average of 21.5 million people being displaced per year.<sup>22</sup> Between 2008 and 2015, some 110 million people were displaced by floods, 60.2 million by storms, 960.000 due to extreme temperatures, 704.000 due to landslides, and 362.000 due to forest fires.

The largest share of involuntary internal displacement occurs in developing countries. Eight percent of people displaced by natural disasters in 2015 were in Latin America and the Caribbean, while 6 percent were in Sub-Saharan Africa. South Asia, East Asia and the Pacific were particularly hard hit in 2015, accounting for 85 percent of all internal displacement. The main reason for this large share is the frequency of disastrous floods and storms, and the fact that areas of high risk are so densely populated. Moreover, developing and emerging countries in Asia generally lack the means to protect particularly vulnerable populations.

More data should help us get a better picture of the extent of displacement due to sudden natural disasters. In 2015, eight of the ten countries with the highest number of persons displaced by natural disasters were in Asia, with the highest absolute numbers in India, China, and the Philippines. Extreme weather events displaced 3.65 million people in India, 3.6 million in China, and 2.2 million in the Philippines.<sup>23</sup> Most of the displacement in India was a consequence of two major flood and storm events. Three major typhoon and flood disasters were responsible for the majority of displacements in China. Several typhoons wreaked major destruction in the Philippines. The three largest of these typhoons displaced two million people. In Japan, the only highly industrialized country on the list of states with the most internal displacement in 2015, some 486.000 people had to flee their homes due to natural disasters, usually typhoons. In the African state of Malawi, seasonal flooding displaced 343.000 people and caused enormous damage to agriculture. In terms of percentages, disaster struck the South Pacific hardest in 2015 when Cyclone Pam displaced 55 percent of Vanuatu's entire population and 25 percent of Tuvalu's.<sup>24</sup>

The floods and storms of the last twenty years which have affected particularly large numbers of people include:<sup>25</sup> heavy monsoon rains which raised the level of the Indus River in Pakistan, displacing 11 million people (2010); monsoon floods in northeast India which displaced 6.9 million (2012); Typhoon Haiyan which displaced four million in the Philippines (2013); Hurricane Mitch which displaced 3.1 million in Central America (1998); Hurricane Sandy on the East Coast of the United States, which displaced 776.000 (in 2012); and Hurricane Katrina in New Orleans (United States), which displaced 400.000 (in 2005). Following very heavy rainfalls, particularly devastating landslides occurred in Guatemala, displacing 50,640 people (2010), and in Indonesia, where 30.000 were displaced (2014).

In October 2016, Hurricane Matthew swept over Columbia, the Caribbean and the United States. In Haiti it generated the biggest humanitarian crisis since the 2010 earthquake.<sup>26</sup> Along the southern coast, 95 percent of houses, infrastructure and agriculture was destroyed, and more than a thousand people died. The government ordered the evacuation of more than 60.000 people. The scope of the humanitarian crisis was exacerbated not least by the fact that Haiti, an impoverished state, had yet to

recover from a terrible earthquake in 2010 and more than 55.100 internally displaced persons were still living in refugee camps. A state of emergency was declared in the southeast of the United States, where Hurricane Matthew caused the death of at least nine people and 13.400 people were evacuated to 247 short-term emergency shelters.

Forest and bush fires have so far made up only a small share of the natural disasters that develop rapidly. A fire in Canada in May 2016 illustrates how wealthy countries can minimize consequences for displaced persons.<sup>27</sup> In May 2016, 88.000 people in Alberta (Canada) had to flee their homes because of a forest fire. Initial estimates said that 2.400 homes had been destroyed. By September, 95 percent of those affected had already returned to their homes, and only 5 percent were still living in rented apartments, waiting for their houses to be rebuilt. The government informed the IDMC that insurance had facilitated this rapid reconstruction. Insurance policies, common in industrialized countries (although high premiums reflect growing risk), do not exist at all in developing countries, where people returning to their homes often have to start rebuilding from scratch.

Forest fires and river flooding caused by heavy rainfall and melting snow have repeatedly inflicted damage in Europe and destroyed communities. Some inhabited areas have been abandoned to restore floodplains and reduce the risk of flooding in cities in lower reaches. Storms and floods have necessitated short-term evacuations along coasts. Several thousand people were evacuated from Britain's east coast in January 2017 in response to storm and flood warnings; however, most were able to return to their homes soon afterward.

However, in comparison to the frequency and magnitude of natural disasters in other regions of the world, Europe has been relatively spared so far. Its fairly low exposure to extreme weather events and its high level of economic development have been crucial in the establishment of comprehensive preventive protection programs. Two European states, the Netherlands and Switzerland, have been able to greatly reduce risk by installing extensive measures. Parts of the Netherlands lie below sea level and are protected by a highly complex system of dikes. In Switzerland, extreme rainfall in 2005 led to massive flooding from rivers and lakes, as well as landslides. Six people died. Since then, Switzerland has invested CHF 2.9 billion a year in risk management, planning the restoration of rivers and creating floodplains; in addition, all municipalities are involved in working out flood hazard maps.<sup>28</sup>

Figures for newly displaced persons provide an initial overview of the situation. But they do not provide any information on how many people failed to survive a natural disaster or on the fates of refugees and their communities: whether they will return, whether they will find safe living conditions and a new home, or whether they may have to flee from further disasters, remain in refugee camps for extended periods of time, or live in unofficial settlements without access to vital infrastructure. In 2015, the IDMC documented hundreds of thousands of long-term displaced persons in 34 countries.<sup>29</sup>

So far it has not been possible to document the further migration flows of people who have been internally displaced due to sudden natural disasters. Documentation is a problem when disaster victims become invisible. When people are no longer considered to be disaster victims, there is the growing risk that

22 IIDMC 2016. The share of displacements due to geophysical events is relatively low, but strong earthquakes do lead to particularly high numbers of deaths.

23 IDMC 2016, p. 15 f

24 IDMC 2016 b

25 Ionesco et al. 2017, p. 40 f

26 IDMC 2016 c

27 Internal Displacement Update, Issue 1: January – August 2016 (<http://www.internal-displacement.org/assets/publications/2016/201609-internal-displacement-update.pdf>).

28 Zaugg-Ott, Kurt 2016

29 IDMC 2016, p. 22

they might not receive needed support and could be overlooked when it comes to disaster prevention and development.

For a basic understanding of the situation, current observations are adequate enough to enable us to at least outline/discern a pattern of migration as a result of natural disasters. We see the temporary or periodic migration of entire families and communities when people seek refuge in safe places in times of disaster. Individual members of a family, usually men, make up a different group of temporary or seasonal migrants when they migrate for a time to cities or other regions or countries, seeking alternative sources of income to mitigate losses. Additionally, many people, especially those who have been particularly hard hit, decide to migrate permanently.

Furthermore, IDMC figures provide no information on whether internally displaced persons remain in the country where they experienced the natural disaster that first caused them to leave their homes. Global estimates regarding this group of internally displaced persons show it to be at least twice as large as the group of persons migrating abroad. Nevertheless, internal migration finds surprisingly little attention in international relations or in the debate on refugees. Anyone who wants to understand international migration and help people in their countries of origin—also to reduce migration to Europe – needs to better understand internal migration and provide better support to the people affected. Many who set off to Europe have spent years living as migrants within their national borders, initially displaced because of natural disasters or violence and wars, or both. Lack of support and opportunity in their own countries drives many to undertake dangerous journeys of escape to other countries where they are often not welcomed.

### 3.2. Migration and displacement through gradual changes such as rising sea levels, drought, severe heat, and soil degradation

Gradual changes in the environment, many of which are linked to climate change, also contribute to large-scale migration flows. As a rule, sudden natural disasters cause many people to flee at the same time, making it easier to monitor their numbers; but slow-onset natural disasters, such as rising sea levels, drought, and increasing temperatures, cause people to migrate alone or in small groups, making it more difficult to identify them as environmental migrants. The IDMC calls these migration flows a blind spot in our current understanding of disaster displacement.

Global sea level rise is one of the most important consequences of human-induced climate change. According to the most recent IPCC report, global average sea level will rise between thirty centimeters and one meter by 2100, with a possible increase of up to two meters in some regions.<sup>30</sup> The reasons for this rise in sea level are the melting of the Greenland Ice Sheet, the Antarctic Ice Sheet and glaciers. Moreover, this warming causes ocean waters to expand. Regional differences in sea level rise are due to sinking or rising land, prevailing winds and ocean currents, which in turn are influenced by climate change. Sea level rise in the western Pacific has been significantly higher in recent decades than the global average, whereas sea levels in the eastern Pacific have been considerably lower than average. Parts of the West Coast of the USA have even seen a decline in sea levels. The East Coast, on the other hand, has experienced a strong increase.

In addition, human activity causes substantial land subsidence. Intensive groundwater extraction, the construction of heavy buildings and infrastructure projects can also cause land to subside. The relatively high sea level rise in Manila, for example, was brought on by extensive groundwater extraction which caused land surface area to sink substantially. Reservoirs and dams in the upper reaches of a river result in additional problems. When dams hold back large amounts of sediment, less sediment reaches the mouth of the river, reducing the deposition of sediment and causing land to subside. Human activity has decreased sediment deposition in some deltas by up to 70 percent. The large river deltas of Ganges-Brahmaputra, the Mekong and the Nile are particularly hard hit. Many megacities have already experienced considerable land subsidence. In the course of the twentieth century, the coastal areas of Tokyo, Shanghai and Bangkok sank five meters, three meters and two meters respectively. The effects of sea level rise due to global warming are greatly compounded in densely populated areas. Low-lying coastal regions, deltas, and islands are particularly vulnerable to sea level rise. Higher sea levels first cause flooding brought by storms and high tides to reach deeper and deeper into the interior. Flooding then erodes the shoreline and increases salinity in the soil and groundwater. About 70 percent of the world's sandy beaches are already retreating.<sup>31</sup> Ultimately, sea level rise threatens to completely submerge low-lying coastal regions and islands.

Many millions of people already live in vulnerable low-lying coastal regions. Salinity in the groundwater of some coastal areas of India and Bangladesh is already so high that agriculture is no longer possible. Ocean warming and acidification also destroy coral reefs, which until now have acted as an important natural buffer, protecting shorelines and providing nursery grounds for fish. It has become dangerous for local fishermen in Southeast Asia to take their small boats out to sea, and fishing is no longer productive because there are hardly any fish left to catch. Low-lying coastal regions are becoming uninhabitable long before they have completely disappeared into the sea.

In 1995, some 60 million people lived in areas that were less than one meter above sea level, and 275 million in areas that were less than five meters above sea level.<sup>32</sup> Eight of the world's ten largest cities are currently located in low coastal areas where population growth is twice as high as the global average. This means that by the end of the twenty-first century, 130 million people will probably be living in low coastal areas less than one meter above sea level and another 410 million in areas less than five meters above sea level.

The extent to which inhabitants of particularly vulnerable places can be protected depends on the protective measures taken by governments, cities and municipalities. Developing countries in particular often lack sufficient resources for protective measures. As a result, inhabitants feel increasingly at risk and under pressure to leave their homes. But even most industrial countries are far from providing their coastal cities with protection against rising sea levels. Sea level rise and increasing risks in coastal regions are already driving migration flows. Families leave their homes, either temporarily or permanently. Others stay on involuntarily, living in dire conditions. Sometimes even entire villages have to relocate. Short reports by people from Lagos (Nigeria) and from the island of Mindanao (the Philippines) are meant to provide a brief impression below of the lives and personal experiences of those affected.

30 IPCC

31 Zhang et al. and wiki.bildungsserver.de [German-language wiki educational server posting on sea level rise] ([http://wiki.bildungsserver.de/klimawandel/index.php/Aktueller\\_Meeresspiegelanstieg](http://wiki.bildungsserver.de/klimawandel/index.php/Aktueller_Meeresspiegelanstieg)).

32 German Advisory Council on Global Change 2006

The inhabitants of Makoko, a slum located in the bay of Lagos, are overcome by fear when night falls. They are afraid of flooding, which is increasingly frequent and sometimes surprises them while they sleep. „Once I dreamt that a cold wind had taken hold of me. When I opened my eyes, I was lying in cold water,” says Dupe Faseun, mother of five children, who supports her family with the money she makes running a small food stand. Her hut was flooded again, a problem the family has to deal with more and more often. (...) In Ajegunle, another low-lying slum neighborhood in Lagos, the flooding forces everyone to stop working. The women in this area make a living by processing fish. „How are they supposed to manage to smoke fish when everything around them is under water,” asks Fatai Ojulari, a member of the fishing association. (...) Moving away is a possibility. However, for the food stand owner it is only a theoretical one. She says, “Even if the flooding gets worse, we don’t have the money to start over again somewhere else.”<sup>33</sup>

Rosalie Ticala, mother of six, who faced a typhoon and flooding on the island of Mindanao (Philippines), reports: “We were trapped in the house for two days until someone came to rescue us in a boat, and we were taken to the local gymnasium which was being used as an evacuation center. We stayed there for a week, but it was so crowded that we decided to leave and go back to the ruins of our house. It proved impossible to live there as well, so we left after another week and spent the next five weeks staying with relatives. I don’t know what the future holds. We are not allowed to go back and live in the place where our old house stood as the government says it’s at risk of flooding if there is another typhoon. We will have to find somewhere else to live and build a house there, but I don’t know when.”<sup>34</sup> The IPCC expects some regions to experience more frequent heat waves in the future, and more intense and prolonged droughts that will negatively affect people and many sectors of the economy.<sup>35</sup> Climate changes that

contribute to an increase in droughts include temporal changes in precipitation, decreased precipitation, and rising temperatures in some regions, and subsequently, an increase in evaporation. Moreover, once the glaciers melt due to global warming, water scarcity in regions that depend on melt water will worsen drastically. In addition, human activity exacerbates water scarcity and drought in a variety of ways: from the overuse of groundwater for intensive agriculture to the construction of reservoirs in the upper reaches of rivers. The natural weather phenomenon El Niño also causes droughts around the world, the regions worst hit being those previously affected by heat and drought.

Droughts occur in all regions of the world. They can occur regularly or suddenly and last for several months or even years. Countries in eastern and southern Africa, South and Southeast Asia, the Pacific and South and Central America have been particularly affected.<sup>36</sup> In the 1980s, more than half a million people in Africa fell victim to drought-related disasters. In 2003, Europe also suffered from dry conditions and extremely high temperatures accompanied by widespread drought and forest fires, especially in France, Spain and Portugal, as well as many thousands of premature deaths among the weak and elderly. Another extreme drought in recent years took place in Southwest Asia (from Pakistan to Iraq and Kazakhstan), where precipitation between 1998 and 2001 was less than 55 percent of long-term average rainfall. The western part of the United States also experienced a drought that lasted from 1999 to 2004; it was the worst drought in 100 years, second only to the Dust Bowl drought of the 1930s. At the same time Pakistan was hit by severe flooding in the summer of 2010, Russia saw a sustained heat wave and drought which sparked ravaging forest fires and killed a large number of people. In 2015 – 2016, El Niño brought an increase in dry conditions, drought and torrential rains to many regions.



Drought in India, Maharashtra, March 2016

33 Olukoya

34 Randall et al. (no date). Translated by the author.

35 IPCC 2015, Dai 2011

36 Dai 2011



## Four types of drought

### **Meteorological:**

occurs as the result of a lack of precipitation over a certain amount of time.

### **Agricultural:**

occurs as the result of a deficit in soil moisture which prevents crops from growing normally. This lack of soil moisture often develops over several weeks or months after a period of water scarcity, and crops and grazing lands are in need of water.

### **Hydrological:**

occurs when streamflow, reservoir and lake levels become so low that the general ecosystem is affected, as are many other areas such as urban water supply and tourism.

### **Ecological drought:**

is a combination of the different types of drought.

Droughts also often occur in connection with other environmental changes that pose an added threat to people's livelihoods and increase pressure on them to migrate. Droughts followed by heavy rains increase the danger of flooding because the ground is so dry that it cannot absorb water well. Droughts also often coincide with high temperatures, increasing the danger of bushfires and forest fires. High temperatures lead to serious health problems in humans and animals, and to considerable losses in grain crops. Heat is also detrimental to grains such as rice and wheat. Various climatic and environmental factors complement each other and can be aggravated by human activity, resulting in massive soil degradation in many parts of the world. Soil quality in crop and grazing lands has deteriorated greatly in many regions over the past three decades.<sup>37</sup> Since fertile soils and water in many regions will become scarcer in the future, and temperatures will rise at the same time, the IPCC fears that food shortages in many areas will increase and drive up food prices, severely affecting poor populations.

According to the UN Food and Agriculture Organization, animal husbandry and grain crops suffer most of the agricultural damages and losses caused by droughts, heat and soil degradation. Health and nutritional risks are also considerable.<sup>38</sup> Populations whose survival depends on agriculture and animal husbandry, and who do not have alternative or additional sources of income, are particularly at risk. When farmers and stock breeders have no access to water reservoirs or irrigation systems, and crops fail and herds die of thirst, they have to use up their remaining food stores and savings. Farm laborers who do not own land lose their jobs in periods of drought, as the first thing farmers do in times of crisis is to cut jobs and switch to mechanized farming if necessary. Droughts force shepherds to give up their traditional routes and nomadic lifestyle. At the same time people lose their income from farming and animal husbandry, droughts typically result in an increase in food prices, putting even more pressure on those affected. For these populations, adapting to circumstances by moving to nearby cities is a vital step.

As rural populations are particularly affected by this kind of hardship, it is not surprising that droughts, heat and soil

degradation are important drivers of migration to urban centers. The link between environmental changes and migration is not immediately apparent because a drought does not generally cause a large number of people to leave their living environment at the same time.<sup>39</sup> But a well-known exception to this rule was mass migration from the Great Plains in the United States as a result of an extreme drought in the 1930s. Migration flows often occur with a time delay because the people affected live off their savings before deciding to move away. Frequently, only individual family members move to economic centers to compensate for crop failures by sending money home. Whether people can survive droughts, heat and soil degradation without moving depends on many factors. This was demonstrated, for example, by field research that focused on the living conditions of shepherds in Kenya, Somalia and Ethiopia. Whether shepherds in those three countries give up their way of life and are forced to move to urban areas depends not only on weather conditions, but also on how much land they can use, how successfully they are able to sell their animals, and whether and how they receive support from relatives and aid organizations.<sup>40</sup>

Many observations and case studies show how crucial the successful migration of individual family members can be for the survival of the non-migrating community. Migrants who stay in touch with their families and villages and support them financially are important. The households left behind can use this money to buy food and medicine in times of crisis when environmental stresses are particularly bad and crops fail. Moreover, with the help of these financial resources and the new know-how that migrants acquire in cities, investments that strengthen the resilience of the population can also be made. Adapting by means of this kind of migration offers great opportunities, even when it is difficult to realize in individual cases. This is exemplified by a study of semi-nomadic people in the Samburu region in Kenya.<sup>41</sup>

Researchers wanted to find out which adaptation strategies allowed the semi-nomadic people of the Samburu region to survive, despite worsening conditions. Climate change is clearly apparent in Samburu. It rains more rarely and less regularly than it used to. Today, more people live there than before, with more

37 Oxfam 2016

38 FAO 2015

39 IDMC 2016 d

40 Ginnetti et al. 2014

41 Bello 2016

cows, higher temperatures and more droughts. The findings of the study were simple. All households with at least one migrant in the family were able to adapt better to worsening conditions than other households, for example, because they had money for medicine, schooling for their children, mobile telephones, and used heat-resistant seeds in their fields. However, life is not easy for the migrants themselves. Their chances of really being able to help their families back home decrease when they arrive in an overcrowded city with bad living conditions, high crime rates, and no social network to help them.

Does this mean that deteriorating environmental conditions lead to an increase in migration, as might be expected? Large-scale statistical studies, in which data on migration flows are correlated with climate data – at the same time other motives for migration are filtered out wherever possible – do not provide a clear answer.<sup>42</sup> The only country that showed a relationship between an increase in temperatures and an increase in migration was Uganda. By contrast, the studies showed that migration flows in Kenya and Burkina Faso decreased in hot weather conditions. Comparable research projects in Asia and Latin America have produced similar findings.

What is the explanation for these contradictory findings? Researchers have observed that in countries where migration decreases as a result of weather extremes, many groups of people are in an extremely precarious position and no longer have sufficient resources to finance a journey. The statistical findings thus confirm a concern that has also been expressed by observers on the ground.

Weather extremes and environmental degradation do not necessarily increase migration from crisis regions. There is also an opposite trend. Weather extremes and environmental degradation intensify poverty and prevent mobility. The people affected lack the financial means to travel. Places of refuge remain out of reach. These people are left unprotected and exposed to natural disasters. Drought and extreme heat bring about crop failures, malnutrition and hunger. Other forms of gradual environmental change also carry the risk of involuntary immobility, malnutrition and life-threatening crises when sea level rise causes saltwater contamination of groundwater and agricultural activities have to be abandoned, for example. Trapped populations lose access to food, health care, education and alternative sources of income.

### 3.3. Displacement through climate protection measures, and measures implemented to adapt to climate change

The list of causes for environmental displacement and migration includes infrastructure projects and changes in land use that are, or can be, related to climate protection measures. These include large-scale reforestation programs, which are intended to create new sinks to absorb greenhouse gases, and large projects to expand renewable energy sources. These range from hydropower plants to large plantations for the production of ethanol and biodiesel. The IDMC estimates that in recent decades, 80 million people worldwide have been displaced through the construction of dams for hydropower plants.<sup>43</sup> The people affected have often not been adequately compensated; instead, they have lost their land, income, and cultural identity, as well as access to housing, health care and education. Women, children, old people,

indigenous populations and minorities are particularly hard hit. The growing demand for biofuels, especially in South America and Africa, has for several years led to the displacement of farmers when large companies have sought to establish plantations for the production of ethanol and biodiesel.

It is to be feared that displacement in the name of climate protection will greatly increase. To prevent this, it is important that climate policies are considered in relation to other political commitments and goals.

Many of the measures taken to adapt to climate change also risk causing displacement. It is certainly necessary in many cases to relocate people from vulnerable regions when they cannot be protected if they stay there. Moreover, there are infrastructure measures that protect certain groups of people from tides and flooding, while forcing others to relocate.<sup>44</sup> Examples of this can be found particularly in coastal urban centers, as will be discussed below in Chapter 4.6. If relocation becomes necessary, the needs and interests of the affected population should be taken into consideration. This has rarely been the case so far.



Typhoon Haiyan in the Philippines, Tacloban City, November 2013

42 Gray 2016 and Nawrotzki 2016

43 IDMC 2017 a

44 Peer 2016

## 4. Case Studies

### 4.1. Bangladesh: Living with diverse natural disasters and migration pressure

With its 162 million inhabitants, Bangladesh is one of the poorest and most densely populated countries on Earth.<sup>45</sup> Although it produces only 0.06 percent of global greenhouse gas emissions, it is one of the countries most threatened by climate change. Except for hilly areas in the northeast and southeast, the country is flat and situated just slightly above sea level. About 10 percent of its entire national territory lies only one meter above average sea level and a third of the country lies below the tidal range. Most of Bangladesh is located in the Ganges-Brahmaputra Delta with its innumerable rivers and canals. Thirty-five million people live in the coastal region, which accounts for one-third of the country. Its special geographical location between the Himalayas in the north and the Gulf of Bengal in the south endows the country with fertile alluvial soils, but it also makes it prone to natural disasters. Storm surges of five or more meters are not infrequent. Tidal waves can be very high in the shallow waters of the northern Gulf of Bengal, while floodwaters from rain in the Himalayas pour into the interior of the country from the other side. Heavy regional rainfall, sediment deposits that prevent the drainage of the massive amounts of water, construction, and the backwater caused by high tides make flooding even worse. On average, one-fifth of the country is flooded every year. Especially the central part of the coastal region, dominated by the great Ganges, Brahmaputra and Meghna rivers, has in recent decades experienced the world's worst natural disasters in the form of typhoons and storm surges. In 1999, for example, a typhoon triggered a storm surge killing 138,000 people.

A further rise in sea level will cause land surfaces to subside into the ocean and waves during a storm surge to rise even higher. So far, extensive mangrove forests in coastal areas have provided a certain degree of protection against storms. However, a sea level rise of one meter would endanger the mangroves. Such a rise would flood nearly 30,000 square kilometers of land, and nearly 15 million people would lose their homes and become environmental migrants in their own country. Flooding from the sea will also increase the salinization of soil and groundwater, which is already of concern in parts of the coastal regions.

At the same time, flooding from the interior could also increase. According to climate projections, climate change will intensify rainfall considerably during the monsoon season, leading to even more frequent, more severe and longer lasting floods as well as increased sediment deposit, further aggravating drainage problems. The discharge flow of water will be delayed significantly due to the strong backwater effect from the sea. In addition, Bangladesh is plagued by heat and drought, which will also become more severe with rising global temperatures. If temperatures continue to increase, the cultivation of rice will no longer be possible in parts of the country because rice crops are very sensitive to heat.

A look at two examples will provide an idea of how severely disasters affect the population and show that disaster-related impoverishment is an important factor in people's decision to migrate. The first example is one of the many disasters that have struck the coastal region of Bangladesh. Cyclone Roanu in spring

2016 led to large-scale displacement and caused hundreds of thousands of people to become homeless in Bangladesh, Sri Lanka and India.<sup>46</sup> Before the cyclone hit, more than 500,000 people were evacuated from the coastal regions of Bangladesh; one-third were not able to return home immediately due to the immense devastation caused by the cyclone. Entire villages were destroyed and people left without shelter, food or clean drinking water. Many people in the coastal region live with the fact that they will always have to rebuild temporary housing; they develop strategies with which they can defy worsening living conditions as much as possible. These include strategies such as the introduction of rainwater harvesting with pond sand filters; the construction of multi-purpose cyclone shelters that double as schools; the development of dike cropping systems, which serve to cultivate vegetables and grain and to breed fish; floating gardens and the development of saline tolerant rice.<sup>47</sup> The country is also making every effort to improve preventive disaster response with an early warning system and flood shelters. But Bangladesh is experiencing dramatic land loss, as Mohamed Rashed, an inhabitant of the coastal region describes, "The land here used to be one kilometer out to sea. (...) We lost mosques, a school, shops and farms. We are scared of the sea now. Gradually it comes closer to our homes. When we sleep, we are scared. Every year the tide rises more and comes in further. Next year this village may not exist."<sup>48</sup>

The second example is a huge flood that took place in northwestern Bangladesh in August and September 2014. It was triggered by a combination of heavy monsoon rains and the arrival of meltwater from the Himalayas. Flooding along the Brahmaputra was followed by extensive flooding in other areas. In Bangladesh, this is considered to be the greatest flood after the mega flood of 2007, which affected 10 million people. Water levels did not return to normal until October 2014. According to estimates by the Bangladesh government, the flood affected 3.5 million people, killing 56 and displacing 325,000.<sup>49</sup> The socioeconomic consequences were profound, as the poor, rural regions of the north, which are especially vulnerable to crop failures and the destruction of infrastructure, were particularly hard hit. The rice harvest was destroyed – a severe blow to the population because the harvest of the two preceding years had also been destroyed by floods in the same regions. Crop failures meant fewer agricultural employment opportunities and a decline in wages at the same time the price of rice increased. For a few months, average income was lower than average food expenditure. Food security was at risk. A survey conducted among the affected population provides insight into common coping strategies during this acute crisis.<sup>50</sup> They included taking out loans, selling labor in advance, support from relatives, sale of land, and temporary migration to urban centers, generally of men seeking additional income. As far as long-term migration is concerned, the study confirmed observations which have been made repeatedly: families do everything possible to try to stay at home or to find a place to live nearby.

An entire family's decision to migrate permanently to a city is often taken only after a hard struggle to maintain a livelihood in its

46 IDMC 2016 b

47 Collaborative Adaptation Research Initiative in Africa and Asia (CARIIA), no date.

48 Randall et al., no date, p. 47

49 Walter 2015

50 Walter 2015



Flooding in Bangladesh, Satkhira District, August 2011

usual place of residence, and the situation has become intolerable. Migration frequently starts when people are overwhelmed by debt, or when they have to sell their land to buy food or pay taxes. The number of farmers without land is on the rise in Bangladesh. The consequences of several successive disasters, increasing impoverishment and the loss of family members also influence decisions to migrate.

As the example of the 2014 flood in northwestern Bangladesh shows, natural disasters have an immense effect on socioeconomic development. This means that it is hardly possible to distinguish between economic and environmental migrants in Bangladesh. Along with economic and demographic factors, floods, storms, heat waves and soil degradation are already some of the chief drivers of migration flows in Bangladesh. Climate change will further increase pressure on people to migrate.

In Bangladesh, there are two distinct types of migration flows: migration to urban centers and migration to foreign countries, especially to India, but also to more distant places. The foundation for today's pattern of labor migration was laid in colonial times. A shortage of labor in England created great demand for labor from the region. The census shows that 3.5 million people left Bangladesh between 2006 and 2011; more than 500,000 migrant workers returned to the country in the same period. In 2014, some 426,000 people left the country to work abroad, usually on fixed-term contracts.<sup>51</sup>

Both types of migration flow include temporary and permanent migration. Remittances from these migrants are indispensable for families left behind and the country's economy. Bangladesh ranks

seventh in the list of the top remittance-earning nations in the world.<sup>52</sup> According to data provided by the Bangladesh government, remittances in 2013 amounted to USD 13.8 billion, which corresponded to more than 9 percent of the gross domestic product. Many observers view the great mobility displayed by Bangladeshis inside and outside the country as an important building block for the future development of Bangladesh, which could serve to boost resistance to natural disasters.<sup>53</sup>

Nonetheless, migration is often associated with great risks for those concerned. Many migrants in the rapidly growing cities of Bangladesh have to live in slums in precarious conditions without adequate infrastructure or the prospect of regular work, and are exposed to even greater hazards than in their previous places of residence. The following data demonstrate the huge challenge urbanization poses for the country<sup>54</sup>: in 1974, some 1.6 million people lived in urban centers; in 1991, that number increased to 22.3 million, jumping to more than 53 million people in 2015.

Migration to India has been made more difficult by a border fence which India built in the 1980s in response to local protests against migrants from Bangladesh.<sup>55</sup> The fence also makes social and economic exchange in the border region more difficult; it fosters corruption (bribery) and the activities of human traffickers endanger the lives of the people who live there. More than 900 persons are said to have been shot at the border between 2001 and 2010.<sup>56</sup> Instead of stopping migration to India, as intended, the fence has contributed to the decision taken by many temporary migrants to become permanent migrants. Not least, the fence is a dramatic development in view of natural disasters and sea level

51 Etzold et al. 2015 a

52 Etzold et al. 2015 a

53 Etzold 2015

54 DataBank of the World Bank, quoted in Walter 2015, p. 54 and <http://databank.worldbank.org/data/home.aspx>.

55 The densely populated border area between India and Bangladesh is 4,097 kilometers long.

About 70 percent of the border is secured by a two-and-a-half-meter barbed wire fence, parts of which are electrified. People still cross the border to visit relatives or to undertake a dangerous journey in hope of a better life. Smugglers, drug couriers, human traffickers and cattle rustlers also cross the border and are often tolerated by border guards. Ramachandran 2017.

56 Human Rights Watch 2010

rise. Since India surrounds Bangladesh on three sides, the fence entraps the population. Particularly vulnerable coastal regions are situated near the border fence, which now blocks an escape route. The journalist Sudha Ramachandran, who lives in India, explained: “India cannot afford to ignore this problem. That would not just be inhumane – increasing sea levels could also directly affect India with similarly catastrophic consequences. (...) So instead of distancing itself from Bangladesh and the issue of climate change, India should strive to cooperate more closely. The demolition of the fence would be an important first step in that direction. But it’s much more difficult to break down walls than it is to build them. That requires clear political will and a revision of the current way of thinking. Most notably, we would have to admit that the border fence between India and Bangladesh has brought fear and uncertainty instead of more security to the people of the two countries.”<sup>57</sup>

Migration to more distant foreign countries also involves great risks and hardship for the migrants and their families. Working conditions for many migrant workers are very bad and they have no legal protection. The only answer to these threats is to ensure that at all different levels, the legal, political, economic and social situations of the people affected are improved so that they are protected and in a position to contribute socially, economically and politically to their place of residence.

## 4.2. Small island states in the Pacific: where to go when land subsides and freshwater turns salty?

The precarious situation of small Pacific island states has become a symbol for the existential threat posed by climate change. This group of twenty-one states comprises thousands of islands scattered across an area of more than twenty million square kilometers.<sup>58</sup> The state of Papua New Guinea has more than 7.3 million inhabitants and is significantly higher above sea level than the other Pacific nations. The other Pacific states have a combined population of less than 2.5 million: 880.000 in Fiji and 651.000 in the Solomon Islands. The remaining twelve states have between 10.000 and 300.000 inhabitants. The highest point on many of these small islands lies less than five meters above sea level; large parts of the atolls are only one to two meters above sea level. People have to be prepared to face the fact that sea level rise will flood large sections of the low-lying islands and that safe areas on higher ground will continue to diminish. Tropical storms regularly cause great devastation. When flooding causes shoreline erosion and storms to wash brackish water into the freshwater lenses of the islands, drinking water supplies collapse. Warmer sea waters and acidification result in a decrease in rates of calcification in coral reefs, which until now have protected the coasts and provided nursery grounds for fish, enabling fishermen to make a living. High temperatures, earthquakes, volcanic eruptions and tsunamis also contribute to the extreme hazards and dangers that South Pacific islanders face. Conditions for agriculture and fisheries are deteriorating dramatically and resulting in a growing number of people who are no longer able to earn a living. The population is increasing rapidly and so is unemployment. The islands today are already dependent on remittances from migrants and foreign aid. The IPCC has determined that climate change significantly inhibits growth and development in the small Pacific

island states and fundamentally threatens the continued existence of some of these states.<sup>59</sup> According to the IPCC, the costs of adaptation to climate change are particularly high compared to the size of the economies involved. The IPCC also recognizes that potential for adaptation is limited. Some outlying islands have already completely disappeared into the sea.

These island states, supported by friendly nations and NGOs, are working in various international forums toward persuading industrial nations to finally develop effective climate policies, and to commit to an ambitious target of lower climate-damaging gases so as to limit the rise in temperature to well below 2 degrees Celsius. These governments have repeatedly demonstrated that survival for them depends on declarations of intent being promptly realized in order to bring about resolute and real change.

More and more inhabitants of these atoll island states are moving away from the outer low-lying islands to more centrally located and somewhat higher islands, and to crowded capital cities. Entire villages have also been relocated. Plans are being pushed forward for further resettlement.<sup>60</sup> In response to climate change conditions, a key component of the future-oriented policies of these microstates’ governments is to actively promote the international migration of their inhabitants. Growing migration from these small countries would diminish pressure on their fragile ecosystems, reduce water and land scarcity, and lower unemployment rates. Increasing remittances from migrant workers would help in the fight against poverty. Due to the island states’ relatively small populations, migration could have a particularly strong effect on demographics, the economy, and their political stability. International organizations support their active migration policies. The International Labor Organization (ILO) has set up an office in Fiji where it evaluates experience with labor mobility and advises governments. It recommends that these small island states invest in training for their citizens to prepare them for the international labor market. It seeks to develop legal standards for recruiting agencies to protect migrants, and encourages states to themselves promote the hiring of their citizens abroad, and strengthen links between diaspora communities and their home countries.

For historical reasons, some Pacific states enjoy a high level of labor mobility and special agreements that enable their citizens to access the labor markets of the United States and New Zealand. Other Pacific states, however, have extremely low rates of emigration compared to other countries around the world, as they have almost no access to foreign labor markets. The World Bank has stated that populations from the poorest Pacific countries have the fewest opportunities to emigrate.<sup>61</sup> Among these countries are Kiribati and Tuvalu, which are also particularly exposed to climate hazards.

The World Bank therefore recommends that Australia, New Zealand and South Korea grant those Pacific microstates especially affected by climate change, such as Kiribati and Tuvalu, full access to their labor markets.<sup>62</sup> The World Bank also advocates that Australia, New Zealand and South Korea support all Pacific island states by increasing the number of temporary work visas and unrestricted visas issued (in lotteries, for example). From the World Bank’s perspective, temporary migration programs are expedient that would also prepare the long-term migration of entire families. It emphasizes that more migration would not only benefit Pacific states, but host countries as well; the mostly young

57 Ramachandran 2017

58 IOM 2017

59 Overseas Development Institute and Climate and Development Knowledge Network, 2014.

60 Böge 2016

61 Curtain 2016 and IOM 2017

migrants would offset the problem of aging in host countries. They could, for example, care for the elderly, stimulate the economy by providing labor power and increasing demand, and pay into unemployment and pension plans. Australian research institutes also call for Australia to open its labor market to citizens of the Pacific region.<sup>63</sup> Unfortunately, Australia is currently taking another path and increasingly closing its doors to migrants from the Pacific region. Canberra uses discriminating international regulations when issuing visas. For example, young people from OECD countries have no problem receiving visas as part of work and travel programs and represent a significant share of the seasonal labor in Australian agriculture. This path is not open to young people from Pacific island countries, although they would stand to benefit the most.

A combination of different strategies is necessary to protect the inhabitants of those island states most at risk to allow people to stay in their home countries as long as possible and see

migration as a last resort, while enabling growing numbers of individuals and families to emigrate on a voluntary basis. In addition, more and more resettlements of entire communities will have to be planned for those who wish to take their social and cultural identities with them to their new places of residence. Politicians from Tuvalu, Kiribati, Tokelau and the Marshall Islands, together with Australian migration researchers, argue that these states too, will probably have to be allowed to relocate entire communities abroad.<sup>64</sup> Considerations concerning this matter are just beginning.<sup>65</sup> Particular in Fiji regional efforts are taking place. Still there are many complicated questions regarding the future of these small island states, but not many answers. How should new settlement areas be found? How can human rights be guaranteed when people are forced to settle in another country? What would happen if an entire island state became uninhabitable? Would its former citizens be able to keep their citizenship? Would rights to fishing grounds and natural resources remain untouched?



Typhoon Haiyan in the Philippines, November 2013

62 Curtain 2016

63 Doherty 2017

64 Graeme 2014

65 The purchase of land by Kiribati President Taneti Maamau in neighboring Fiji received a high degree of media attention and is showing how difficult the undertaking is. The relatively small area purchased is not appropriate for resettling larger communities. The land was already inhabited before being bought. Inhabitants had to give up the land and are now sceptical about the influx of new people. To date, Kiribati has only used the area for agricultural purposes.

### 4.3. Afghanistan: war, violence and natural hazards are destroying people's livelihoods

Afghanistan has been suffering from wars and violence for decades. At the same time, the country is particularly afflicted by global warming and natural disasters. Following Haiti, Afghanistan was the country with the highest number of deaths due to natural disasters between 1980 and 2015, whereby geophysical and weather-related disasters were each responsible for half the deaths.<sup>66</sup>

Afghanistan is a mountainous country with a population of 32.5 million. More than half of the country's territory is at elevations higher than 2,000 meters; the highest peaks exceed 7,000 meters. Floods and landslides due to heavy seasonal rainfall, snow and glacier melt, avalanches, and earthquakes destroy communities, infrastructure and agriculture. In addition, the country experiences extreme temperatures (heat and cold) and drought and desertification. Advancing climate change has significantly increased environmental stress.<sup>67</sup> Changes in seasonal precipitation patterns and an increase in temperature have a wide range of effects. For example, temperatures are not cold enough when snow in northern Afghanistan falls later in the season than it used to, so it cannot settle and melts rapidly in spring; this intensifies flooding and prolongs the period of water scarcity in summer. Heat waves are becoming more extreme and more frequent. Heat, drought, water scarcity and soil degradation greatly endanger agriculture and food security. It is still frequently possible to attribute new displacements in Afghanistan to individual major causes. The IDMC, for example, counted 335,000 new cases of displaced persons due to conflict and violence in 2015, and 71,000

new displacements due to natural disasters.<sup>68</sup> It is not as easy to distinguish between the causes if we consider the overall situation of the population. Natural disasters, weather extremes, a decline in crop yields, and the ensuing loss of agricultural employment opportunities exacerbate the destructive effects of war and violence on people's lives in Afghanistan. War and violence prevent the implementation of protective measures, such as the construction of sturdy houses, dams, and the installation of early warning systems for earthquakes to safeguard against extreme natural hazards. At the same time, war and violence and the great number of internally displaced persons force more and more people to live unprotected in vulnerable regions, which in turn means that natural disasters affect a growing number of the country's inhabitants.<sup>69</sup> War and violence also hinder the return of migrants so that the number of protracted displacements – people who permanently live in precarious conditions without work – has continued to rise in recent decades. Three out of four persons in Afghanistan have been displaced at least once, if not several times.

To what extent this humanitarian crisis can be linked to global warming is in most cases difficult to reconstruct. The same applies to migrants from Afghanistan. When asked why they left their country, they often mention the lack of employment perspectives along with fear of violence and persecution. As a rule, people are not asked whether they have lost their livelihoods because of heat or drought, or because of violence, or both. When discussing whether Afghanistan, or specific regions of the country can be considered safe, we should also take into account climatic and environmental hazards to which the population is increasingly exposed – aside from war and violence.



Flooding in Afghanistan, Behl, April 2014

66 World Bank 2017

67 Ginnetti et al. 2015

68 IDMC 2016 a and IOM 2016, p. 6. Following the withdrawal of international troops from Afghanistan, violence in the country has greatly increased since 2014, causing the number of migrants and refugees to rise sharply within the country and abroad. Nearly 13 percent of Afghanistan's citizens were living abroad by the end of 2015.

69 UN Office for the Coordination of Humanitarian Affairs 2014.

70 IOM 2016, p. 53

#### 4.4. United States: climate deniers, rising sea levels, and population movements on the East Coast

American President Donald Trump and his administration are in favor of the continued exploitation of fossil energy sources and are doing away with American climate protection policy; they are also publicly considering withdrawing from the international Paris Climate Agreement. A prominent climate denier was appointed to head the Environmental Protection Agency (EPA), and staff is to be cut back to the point that compliance with (still) existing environmental protection laws and regulations can hardly be checked or monitored. The fact that the United States, a country with the one of the highest levels of greenhouse gas emissions, refuses to pursue climate protection policy is a disaster for the fight against global warming. Well-backed advocacy groups have succeeded in sowing doubts on climate research findings among politicians, business people, the public, and some conservative media. They also assert that climate policies damage the economy and weaken the United States' international competitiveness. Scientists and civil society organizations are protesting against this ignorance and attempting to inform and raise awareness by showing that global warming is already clearly evident in the United States and expected to take on dramatic dimensions in the future.<sup>71</sup> Crop yields in the American Corn Belt will diminish due to heat and drought, forest and bush fires will become more frequent, and storms will become more extreme.

Sea levels in the eastern United States are already rising considerably faster than the global average, and yet, the number of people moving to the coast continues to grow. Recent calculations showed that a temperature increase of 2 degrees Celsius could cause water levels on the East Coast to rise as much as 40 centimeters by 2050, a challenge coastal cities are not prepared to cope with. Rapid population growth in coastal areas has increased the number of people exposed to flood hazards. Researchers have calculated that a 0.9-meter sea level rise on the East Coast by 2100 could expose some 4.2 million people to flooding, and a rise of 1.8 meters could put as many as 13.1 million people at risk if no comprehensive flood protection measures are implemented.<sup>72</sup> Retreat to higher ground could therefore trigger large migration flows within the continental United States, while the hot and arid regions of the southern and western parts of the country would also become more inhospitable.

So far, many people seem unperturbed by the growing frequency with which streets and roads in coastal regions are flooded. Even the capital, Washington DC, located on a river that flows into Chesapeake Bay, is expected to experience nearly thirty days of flooding per year, referred to as 'nuisance flooding'<sup>73</sup>. "Since the relative sea level is rising, it doesn't take a violent storm or a hurricane for flooding to occur, as used to be the case,"<sup>74</sup> a climate scientist in Washington explains. "It's sunny and nice outside, but intersections are under water and we can hear it bubbling in the sewers." The pipes that are supposed to drain



Hurricane Matthew in US, Florida, October 2016

71 See, for example, the NGO Climate Central, <http://www.climatecentral.org/>

72 Hauer et al. 2016

73 The term 'nuisance flooding' is actually used in the United States, implying that flooding does not endanger people, even if it does incur costs.

74 Quoted by Schrader 2017



rainwater do the opposite because of higher sea levels. The flat islands in Chesapeake Bay, inhabited by some 700 people, are already subsiding into the sea. The first island is expected to disappear completely in about twenty years. Climate scientists attribute the high rise of sea levels on the East Coast to the interaction of two mutually complementary factors: sea level rise in consequence of climate change, and the subsidence of land due to long-term geological processes and human activity (excessive groundwater extraction and the weight of buildings). Climate deniers accept only the second part of this explanation.

Hurricanes have a much more drastic effect. They wreak devastating destruction and have already caused a great many people to lose their homes. In 2005, some 400,000 people were temporarily displaced by Hurricane Katrina, and in 2012, Hurricane Sandy displaced as many as 776,000 people. There has been an ongoing debate in the United States in the wake of the devastation caused by Hurricane Sandy on the extent to which houses in particularly exposed, low-lying coastal regions should be rebuilt and better protected, and whether communities should be abandoned. Parts of neighborhoods considered especially vulnerable to hazards were abandoned in New Orleans (2005), on Staten Island, one of New York City's boroughs (2012), and in neighboring New Jersey.<sup>75</sup> At the same time, the United States is subsidizing flood insurance which provides financing to rebuild homes after a disaster hits. "We basically subsidize people to stay in a high-risk area,"<sup>76</sup> an expert criticizes, and suggests that positive incentives should be provided to encourage relocation. People have to start thinking about a managed retreat from vulnerable areas.

In 2016, disaster struck again in the state of Louisiana on the Gulf of Mexico.<sup>77</sup> Unusually heavy rains took residents by surprise and brought extreme flooding, leaving 40,000 houses damaged and more than 10,000 people in temporary shelters. Thousands of people lost all of their belongings. Louisiana was unable to protect inhabitants, although the state is experienced in dealing with storms and land loss. The Mississippi Delta, in southern Louisiana, is losing an area of land roughly the size of a football field every hour. A large infrastructure project, designed to save land from being washed away, is in the planning stage; at the same time, islands beyond protective barriers are being abandoned. It remains to be seen whether this project is successfully implemented – BP is supposed to contribute a major share of the financing as compensation for the oil spill that followed the explosion of its Deepwater Horizon offshore oil rig in the Gulf of Mexico on 20 April 2010. The project can be viewed as a new strategy, involving both protection and retreat from the sea. The resettlement of 70 Native Americans who live on an outlying island is currently being prepared.<sup>78</sup> The New York Times called these people the "first American climate refugees."<sup>79</sup>

However, there is another notable case with a longer history. Native communities in Alaska are also in the processes of being relocated.<sup>80</sup> Alaskan Native communities have always been exposed to extreme weather conditions, which they traditionally responded to with seasonal migration. But last century, under pressure from the United States government, they had to permanently settle in coastal regions, which they now have to leave again due to climate change. Temperatures in Alaska are rising more rapidly than average, threatening life in traditional Alaskan Native villages in a number of ways. Community lands

are being lost to coastal erosion. Permafrost is thawing, and the traditional way of storing food in the ground is becoming unreliable. Shifts in seasonal ice melt and changes of fauna and habitat further undermine communities' traditional lifestyles. Resettlement plans are a subject of controversy among the inhabitants themselves. Some fear that living conditions will worsen even further in an unfavorable new location and that they could completely lose their thousand-year-old cultural heritage. Financing is proving to be a difficult issue. Not least, the process of resettlement itself is not all that easy, as remote villages can often be reached by helicopter only.

Climate scientists have shown that climate change contributed to the intensity of Superstorm Sandy (as Hurricane Sandy is also referred to) and have proven that the risk of extreme storms and flooding on the American East Coast are considerably increasing. One may wonder how people in the United State can deny that climate change is ongoing in the face of obvious natural disasters. An American public opinion researcher explains, "It's more the norm that people don't change their views than do change their views, especially when something becomes more entrenched with ideological and political arguments."<sup>81</sup> And that is most certainly the case in the United States when it comes to climate change.

The ignorant attitudes and policies of the current American administration are very risky as they fuel climate change and show no respect for science and well-structured government aid programs. Both are necessary to find solutions for people who are affected. There is also the risk that precious time will be wasted, in which the United States would still be able to develop effective coastal protection measures for the East Coast and wherever necessary to plan a managed retreat from high-risk areas while staving off social hardship.

#### 4.5. Africa: climate change, escalating violence and continental migration

The African continent, 'the cradle of humankind', has experienced migration flows since the beginning of human development. People responded to changes in environmental conditions by setting out in search of water, following herds, and gradually populating other continents. Mobility in Africa has also played a major role in more recent centuries – on one hand it was permanent and forced (enslavement), on the other hand it was more or less voluntary (economic reasons). Incentives have included large seasonal demand for labor in the production of typical 'colonial goods' (cocoa, coffee and so on), and the promise of relatively high wages in South African mining operations.

In the meantime, following several 'lost decades', Africa has been hailed by the media as a "continent of hope"<sup>82</sup> and "the new Asia."<sup>83</sup> In Europe, however, the perception of Africa has been increasingly dominated for a number of years by the image of 'illegal' migrants, leading to calls for a walls-up policy. Given recurring famines, new civil wars, terrorist threats and the economic growth which is of no benefit to the poorer segments of society, the images of migrants from Africa which have impressed themselves in the public mind are those of people trying at all cost to scale massively secured fences at the borders to the Spanish exclaves in northern Morocco, or of people who take the risk, frequently resulting in death, of reaching Europe from Libya in overcrowded and unseaworthy boats. These migrants are often

75 Upton 2014

76 Upton 2017

77 Teague 2016

78 Davenport et al. 2016

79 Ibid

80 Northern Arizona University 2011. See also "Tribes & Climate Change Newsletters", published by Northern Arizona University. <http://www7.nau.edu/itep/main/tcc/Resources/newsletters>

81 Quoted by Kahn 2014

82 Dennin 2013

83 Hiller von Gaertringen 2014

84 Official title: African Union Convention for the Protection and Assistance of Internally Displaced Persons in Africa.

considered to be 'economic refugees' who will do anything to take advantage of Europe's more favorable economic conditions.

Fearing a supposed 'mass migration to Europe', people overlook the fact that most migrants who are fleeing war, violence, and natural disasters seek shelter in other regions of their home countries. When they cross national borders, migrants generally end up in a neighboring country. The number of predominantly young migrants who actually do set off to make their way from Africa to Europe is negligible compared to the overall number of migrants. The largest burden of migration flows is not shouldered by Europe but by Africa. The Kampala Convention of the African Union (AU) adopted in 2009,<sup>84</sup> which entered into force in 2012, commits signatory states in Africa to protect and support people who have been displaced due to natural and human-induced disasters, including climate change.

To analyze more closely the share of environmental factors influencing migration flows in Africa, it makes sense to shed light on key problem areas by drawing a longitudinal line from west to east. On the west coast of Africa, which extends over 6.000 kilometers from Mauretania to Cameroon, sea level rise is increasingly affecting people's lives.<sup>85</sup> Professor Kwasi Appeaning Addo of the University of Ghana summarizes the problem as follows: "In West Africa, infrastructure and economic activity are centered along the coast. Sea level rise therefore threatens our existence and our sources of income. We are sitting on a time bomb."<sup>86</sup> Fishing villages have to be abandoned, and resort hotels in Gambia and Senegal need to be relocated. Colonial coastal fortifications such as the UNESCO World Heritage Sites in Ghana, which played an infamous role as gathering and shipping points for the slave trade on the former Gold Coast, have to be especially protected or even abandoned. Suburbs of coastal capitals such as Nouakchott (Mauretania), Accra (Ghana), Cotonou (Benin), Lomé (Togo), and Lagos (Nigeria) have already been directly affected; streets and houses were being regularly flooded and had to be abandoned to the sea. Enormous efforts are required to protect the coast and safeguard densely populated coastal regions, where more than 30 percent of the inhabitants of these countries live and over 50 percent of their economic output is generated. Adapting to sea level rise only by moving settlements inland and building necessary infrastructure would cost the economies of the countries concerned the equivalent of 5 to 10 percent of their gross domestic product. Millions of people pay a high price for a problem they have not generated.

A similar problem becomes apparent when we look at the situation for artisanal fisheries along the coast. Catch yields have been diminishing for years. This is due not least to the fact that industrial fishing fleets from the EU and Asia (China, Taiwan) have drastically reduced stocks in coastal waters. In line with several fisheries agreements, the EU pays for the right to send trawlers from France, Portugal and Spain to fish off African coasts, but as a rule, these payments are never passed on to fishing villages. Navies of the African countries involved are hopelessly overstretched and do not have the capacity to monitor compliance with the agreements. The ones who suffer are the local fishermen whose livelihoods are destroyed.

Leaving the coast behind, the farther east one looks the more serious the problems related to drought in the Sahel region become. It becomes clear that here too, climate change is a reality and that it further burdens local communities already facing a

number of problems. The extended region around Lake Chad is inhabited by some 50 million people and shared by four countries: Nigeria, Niger, Chad and Cameroon. The average size of Lake Chad diminished in recent decades, from over 22.000 square kilometers in 1960 to only 1.700 square kilometers in 1985, before increasing again to about 8.000 square kilometers.<sup>87</sup> Its water level is generally subject to strong fluctuations, but the tendency is reminiscent of the Aral Sea in Central Asia, caused by factors that are advancing desertification in the entire Sahel region: overuse, overgrazing, deforestation, and inappropriate methods of irrigation. Factors directly related to climate change are also becoming more and more important: higher average temperatures, prolonged heat waves and changing precipitation patterns. What has for centuries constituted the livelihood for the entire region, now contributes to the further impoverishment and marginalization of a growing population.

But in the region surrounding Lake Chad, another factor that triggers migration flows has also become a serious problem in Mali: Islamist terrorism. The terrorist group Boko Haram has been trying since 2009 to establish a caliphate in the impoverished and neglected northeastern part of Nigeria, the most populous country in Africa. Climate change is not to blame for the development of Boko Haram, but its effects on poor and marginalized communities have made recruiting easier for Boko Haram due to the lack of employment perspectives for many young men. The terrorist militia attacks villages and small towns. Those who do not want to flee risk execution or forced recruitment. The number of Boko Haram's victims is now estimated to have reached 20.000. Since terrorist activities carried out by Boko Haram prevent people in rural areas from cultivating their fields, they often have no choice but to flee. Some 2.7 million people are on the move in the area shared by four countries surrounding Lake Chad, and roughly 9 million are in urgent need of food aid. An example of the burden of migration flows that Africa has to shoulder is the situation in Maidiguri, the capital of the Nigerian state of Borno in the northeast of the country, which had about one million inhabitants before the rise of Boko Haram. The exodus triggered by Boko Haram's terrorist acts brought some 1.6 million refugees to the city, more than doubling the population by mid-2016. Statistically, this means that there are 1.6 refugees for every inhabitant. To put this into perspective, Germany experienced an influx of roughly one refugee for every 80 German citizens following the opening of its borders in late 2015. For a long time, Boko Haram was able to elude Nigerian troops in the region surrounding Lake Chad but it has now come under massive military pressure. Since the terrorist group has reverted to carrying out attacks, food supply is still at risk and the cultivation of fields continues to be very dangerous for inhabitants. The refugee crisis in the Lake Chad Basin exemplifies a problem also apparent in the massive famine crisis in East Africa. The community of states contributes only a fraction of the means needed to provide reliable basic care to refugees. The regions affected and African states are not adequately supported in their efforts to cope with these problems and are left to deal with them largely on their own.

The extent of the drought in the Horn of Africa, which currently threatens the lives of some 20 million people in Yemen, Somalia, Kenya, South Sudan und Ethiopia, is reminiscent of the famine in the Sahel region in the 1970s and 1980s. More recently, the Horn of Africa experienced a prolonged drought in 2010 and 2011.

85 Fagotto 2016

86 Ebenda

87 World Bank 2016: 2

88 Fischer 2017

The climate in this region is influenced by fluctuating sea surface temperatures in the Indian Ocean.<sup>88</sup> Similarly to El Niño and La Niña in the Pacific, sea surface temperatures off the coast of East Africa and Indonesia also oscillate between a warm and a cold side. When sea surface temperatures off the coast of East Africa are cold, less water evaporates and the northeast trade winds, which bring rain to the interior of the region, are weakened or completely absent. Droughts on the African continent in recent decades have not only become more frequent, but also lasted longer. When the intervals between recurring droughts become shorter, the ability of the population to recover from the most recent drought and prepare for new droughts diminishes. If extreme climatic events are accompanied by violent conflict, as in Yemen, Somalia, and South Sudan, then people try to reach refugee camps to obtain some degree of protection for themselves and their families and to ensure survival through food aid. At the same time, it is shameful for the rich Global North that non-governmental organizations, the World Food Programme (WFP) and the UN Refugee Agency (UNHCR) are chronically underfunded and frequently unable to ensure more than a bare minimum of care in refugee camps, despite their repeated appeals for donations and financing to individuals and states. In these camps too, hunger is a constant companion. If we take a look at what Germany, for example, or the EU are doing in light of developments in Africa, we see frenzied activity in which the EU has concluded or is currently negotiating so-called 'migration partnerships' with countries such as Mali, Niger, Nigeria, Ethiopia, and Senegal. In view of the fear of the looming threat of 'mass migration to Europe' dominating the debate, these partnerships focus on the biometric documentation of all migrants in their countries of origin, and the acceptance of return agreements for 'illegal' migrants. The EU is also urging African countries to close their borders to neighboring countries, and is working together with border authorities to stop people on their way to Europe as early as possible. The impact on the populations affected can be devastating. Common travel routes within Africa can be disrupted or at the very least made much more difficult and expensive, adversely affecting economic activity and

family relations. Last but not least, this can also prevent widespread temporary labor migration, which serves to compensate for the loss of income caused by drought or soil degradation. In preparation for the G-20 summit in Hamburg, Germany, at which Africa will be a focus of attention, ministries, think tanks, and foundations are outdoing each other presenting concept papers calling for investment in Africa. However, the problem with the German Development Ministry's prominent "Marshall Plan with Africa"<sup>89</sup> is that additional sources of public funding have not been provided. These numerous initiatives, memoranda and planning papers do not mention that in recent years, Europe has been pursuing trade policies in Africa with trade rules that are not fair. The example of the fisheries treaty given above could be expanded to include the aggressive market access policies for subsidized agricultural products from Europe, which stifle local and regional agricultural initiatives in Africa. While these decisions are frequently made within the framework of an 'unholy alliance' with local political elites in Africa, it is up to taxpayers in Europe to stand up against policies made in Brussels that reduce instead of expand independent development in Africa. Economic Partnership Agreements (EPAs) which have been negotiated since 2002, and in some cases signed with various regional negotiating groups in Africa, are proving to be especially problematic. Decisions in the EPAs regarding trade liberalization establish market access for European agricultural products; by eliminating import duties, they also put a large dent into the budgets of African states as they cause important sources of revenue to cease. Although only 80 percent of trade in industrial products is to be liberalized following longer transitional periods, this means the end for many industrial sectors in Africa currently in planning and development. With the mantra-like invocation and implementation of a free trade ideology, the EU in fact robs its African partners of their opportunity to pursue independent economic development. The EPAs are reminiscent of the fatal one-sided treaties concluded in the early stages of European expansion on the continent. Moreover, they thwart all efforts to ease migratory pressure through development cooperation programs and projects.



Drought in Ethiopia, February 2011

89 BMZ (German Development Ministry) 2017

## Environmental migrants from Syria? Climate hazards in the Middle East and North Africa: extreme drought, temperatures, water scarcity and flooding

In recent years, there has been intense debate about whether there is a connection between the outbreak of the war in Syria and climate change, and whether refugees from Syria should therefore be considered environmental migrants. People, however, are fleeing primarily from war or violence. Nonetheless, it is also true that an extreme drought accelerated rural migration in Syria in the years prior to the outbreak of the civil war. The increase in internal migration, growing populations in the cities, and the rise in food prices gave – so the argument goes – added momentum to the protests against the Assad regime.

Such argumentation is problematic, as it lends excessive importance to the deteriorating environmental conditions and their consequences, implicitly diminishing the significance of other more important factors. After all, declining oil revenue due to reduced output had already caused the Syrian pension system to break down before the outbreak of the civil war; not enough jobs had been created, economic development stagnated, corruption continue to rise, and the state's administrative capacities were inadequate, a fact reflected by failed agricultural reform and other things. The brutal way in which the government suppressed protests further fueled the escalation of violence.

At least this debate drew attention to the fact that the Middle East and North Africa are already exposed to major environmental stress. Vulnerability could greatly increase in the future. Climate simulations illustrate that heat waves and desert storms could make parts of the Middle East and North Africa uninhabitable. By 2050, nighttime temperatures in summer could be higher than 30 degrees Celsius, with daytime temperatures rising to more than 46 degrees Celsius; by 2100, daytime highs could frequently reach 50 degrees Celsius; by the turn of the century, there could be 80 days per year of extreme heat instead of the current 16 days.

Computer simulations also show that as a result of global warming, precipitation patterns on the Nile will change and life in that region will become more and more unpredictable, accompanied by more frequent and devastating floods as well as water scarcity. One simulation has shown that average water volume could increase by 10 to 15 percent. At the same time, extreme years of too much or too little water will become more frequent. Today, the lives of 400 million people in eleven countries depend on water from the Nile. Many of these people are already experiencing water scarcity. There are no easy solutions in sight which could protect a rapidly growing population from the Nile's unpredictability due to climate change. The population living along the Nile could double by 2050.

Sources: Brzoska and Fröhlich 2016, Fröhlich 2016, Lelieveld 2016 and Radford 2017.

### 4.6. Cities as places of refuge: urbanization in times of climate change

The number of people seeking refuge in cities is often overlooked by the public because the image predominantly projected by the media is that of refugee camps in rural areas. In fact, more than half of all migrants and people who have been displaced move to cities, primarily to the rapidly growing metropolises of the Global South. People frequently arrive without money or residence permits and have to live in shanty towns where they have little access to work, education, health care, and basic infrastructure; they also often find themselves helplessly exposed to violence. Moreover, these slums are frequently situated in vulnerable areas threatened by flooding and landslides. Migrants are often even worse off than local inhabitants, who are just as poor. In Southeast Asia, for example, observers have noted that migrant groups were less able to protect themselves against heavy storms than local inhabitants because they could not assess danger and were not familiar with protective measures. This means that in their place of refuge, many people are forced to live in miserable conditions, are unable to build a new livelihood for themselves, are no longer counted as migrants in statistics, no longer receive aid, and run the risk of being displaced again. Migration studies and international organizations refer to this as

prolonged displacement and forgotten or invisible displaced persons; a particularly large share of them end up in slum neighborhoods.

Of course, success stories do exist, as when migrants take advantage of the opportunities cities offer to some of them. Migrants make important contributions to their host cities. They help relieve labor shortages, offset the aging of societies, and bring new ideas and knowledge with them.

But the rapidly growing cities of the Global South are not adequately prepared to take in and integrate migrants. The cities themselves face a variety of issues and challenges in politics, business, society, urban development and climate protection such as the fight against poverty, the creation of employment opportunities, housing construction, and the modernization and expansion of infrastructure.

Climate change poses special hazards to urban centers. One problem is that cities are getting hotter. The temperature in cities can be several degrees above the temperature in surrounding areas. This is due to building density, insufficient vegetation and increased electricity consumption in metropolitan areas. Even if average global warming remains below 2 degrees Celsius compared to pre-industrial levels, an increase of up to 4 degrees Celsius by 2100 is expected in a number of large cities.<sup>90</sup> More

90 WBGU 2016, p. 87

frequent heat waves are intensified in these urban heat islands so that inhabitants will be exposed to significant health hazards. High temperatures result in heat stress and even death; they make local air pollution worse and can contribute to a prolonged transmission time of pathogens. In 2003, a heat wave in Europe is believed to have caused tens of thousands of deaths, particularly among the weak and elderly.<sup>91</sup> Belgrade is an example of the increase in hot days recorded in a large European city. Between 1949 and 1958, the temperature rose to more than 30 degrees Celsius on an average of 15.6 days; between 1989 and 2007 temperatures exceeded 30 degrees Celsius on 21 days.<sup>92</sup>

Another urban problem is water supply. Half of all cities with more than 100,000 inhabitants are already located in areas suffering from chronic water scarcity.<sup>93</sup> Droughts in surrounding areas lead to an increase in food prices and food shortages for urban populations. Continued urbanization and global warming could cause these risks to become considerably more acute over the next few decades.

Glacier melt also is a threat to many urban centers. Meltwater triggers floods and wet landslides that can destroy entire settlements, and then later, once the glaciers have disappeared, water scarcity becomes a problem. Cities whose existence are at risk include Lima, the capital of Peru, where water supply relies almost entirely on the meltwater from Andean glaciers.<sup>94</sup>

Sea level rise also extends the area affected by floods that are triggered by exceptionally violent storms. This kind of land loss, affecting areas of high population density in particular, clearly exceeds the loss of land area caused only by sea level rise. In addition, extreme weather events endanger energy supply, transport routes and construction.

Demands on cities increase considerably with climate change. The more that climate change progresses, the more that populated areas are affected. Some urban regions will have to be abandoned completely. People in vulnerable large deltas in Southeast Asia have already been forced to relocate repeatedly, and the number of people who have been displaced more than once will increase significantly.

Some megacities in low-lying coastal areas have already begun to prepare for the consequences of climate change and made investments costing billions. These projects are controversial among local populations as they disrupt many people's lives and necessitate the relocation of mostly poor population groups; moreover, further negative impacts cannot be ruled out. As a look at Jakarta and Manila shows, some dilemmas quickly emerge due to the complexity of climate and environment-related hazards, and reciprocal effects with construction measures.

In Jakarta, the capital of Indonesia, three large infrastructure projects meant to protect the city against flooding are currently being planned with the support of the World Bank.<sup>95</sup> The plan involves building a wall more than thirty kilometers long in the sea off the city's shoreline. Planners intend to build islands beyond the wall to create living space for two million people. The city is also erecting cement walls on the banks of its many rivers to prevent them from overflowing. These measures encumber a significant part of the population and can lead to serious subsequent problems. The weight of the cement walls will augment the sinking of the ground, causing relative sea level rise in Jakarta to increase. The walls on the river banks, which have already been built, prevent water brought by heavy rains from flowing off, leading to

severe flooding in adjacent residential areas. Lastly, communities situated on the river banks have had to be abandoned. A man, whose house had to make room for a protective wall, complains: "I did not receive any kind of compensation. (...) My old house belonged to me. It stood on a piece of land which a friend had given to me for free."<sup>96</sup> This man has now been assigned an apartment and he has to pay the rent out of his own pocket.

Manila, the capital of the Philippines, is also working on large projects to protect against flooding.<sup>97</sup> The city has already had bad experience with resettlement due to such projects. Some years ago, about one thousand families who had been living in shantytowns were relocated to shacks made of corrugated metal in an area that offers no employment. Their commute to work in Manila is three hours each way. With no perspective for a better life, people are leaving, and more than every second house in this new settlement has already been abandoned. Families have moved back to the capital's slums and live with the risk of flooding, repeated relocation and displacement. The World Bank expects that pump stations now in planning for flood protection will alone necessitate the relocation of more than 10,000 informal dwellers in Manila.<sup>98</sup> Misereor expert Schaubert is calling on the companies involved to exert pressure on authorities so that the planned relocation is carried out in a socially responsible manner: "I know that it isn't easy for companies. (...) But it is their obligation to take this into account."<sup>99</sup> Manila's foreign trade chamber intends to provide support to the foreign companies involved.



Megacity Lagos in Nigeria, August 2013

91 WBGU 2016, p. 87

92 At the same time, the risk of flooding due to global warming increases because the city is located at the confluence of two large rivers affected by snowmelt. See World Bank 2014.

93 WBGU 2016, p. 87

94 WBGU 2008, p. 92 f

95 Lenz 2017

96 Lenz 2017

97 Peer 2016

98 Roughly three million inhabitants of the metropolitan area of the capital live in slums, often in areas vulnerable to flooding.

99 Peer 2016

## People on the move and hope in the transformative power of cities

In 2009, over half of the world's population was already living in cities. Today, there are twenty-one megacities across the globe with over ten million inhabitants. The UN estimates that in 2050, over two-thirds of all people will be living in metropolitan areas. This urbanization is already particularly evident in highly developed industrialized nations where 74 percent of the population lives in cities, but developing countries are currently catching up at an accelerated pace. Many cities are overwhelmed by a rapid and uncontrolled increase in their populations. Living space and employment are scarce and infrastructure is inadequate. Today, 850 million people already live in slums. That figure could reach two to three billion in 30 years. There are many reasons for urbanization and increasing population density in coastal regions; these include opportunities or hope of employment, better education, infrastructure, better health care and protection against persecution. Population growth is an important factor as are various types of environmental stress in rural and arid regions, as well as war and violence.

The German Advisory Council on Global Change (WBGU) hopes that cities will develop innovative power by developing and testing solutions for sustainable living conditions and sustainable economic practices. For example, a circular economy for building materials should be introduced to reduce the consumption of resources. New infrastructure and mobility concepts for areas of high population density with multiple centers and shorter routes could improve both people's quality of life and reduce energy consumption. All sources of fossil emissions should be replaced with zero-emission alternatives. Urban redevelopment should strive to preserve natural resources, ensure that inhabitants have access to resources, and promote regional and local solutions. A single master plan cannot be applied to all regions and societies. The WBGU calls for a broad transformation of cities towards sustainability; only in this way will we be able to keep global warming below 2 degrees Celsius and cope with urbanization. We are still miles away from this kind of transformation. But at least many cities belong to transnational networks where urban climate protection is developed and cities formulate their own climate protection goals.

Source: WBGU 2016.

## 5. Political approaches in search of solutions

In recent years, questions regarding climate-related and environmental migration have been dealt with at various political levels. Cooperation is still in its first stages, however, given the vast scope of the problem. The first step is getting all stakeholders to recognize that the effects of climate change and environmental degradation are important drivers of migration and displacement, and to accept the fact that policies must focus on protecting the people affected. There is still much to be done to increase the safety of people living in vulnerable areas and safeguard their livelihoods in order to avoid their forced migration. Furthermore, there is a lack of legal migration opportunities. Members of the Department of Migration, Environment and Climate Change of the IOM recently announced, "It took years and many debates until international organizations addressed the issue of environmental migration."<sup>100</sup>

The issue is marginal to the mandates given to organizations by states. It lies in a grey zone, for which the competence of various organizations has not been clearly defined. Four areas of policy, which as a rule are not closely interlinked, are simultaneously responsible for matters related to climate and environmental migration: migration policy, climate and environmental policy, development policy, and disaster relief. While states have been working together closely for more than fifty years on trade policy, negotiating binding regulations within the framework of the World Trade Organization and bilateral agreements, these states have

been very intent on retaining their national autonomy and full sovereignty when it comes to migration and climate policy. The political interest of governments on these issues is not strong enough. States also shy away from binding agreements, presumably because their implementation would involve visible and in some cases far-reaching economic and social change. Binding and effective international climate policy agreements would oblige states to undertake an ecological restructuring of their economies, which they would have to enforce in the face of opposition from powerful industry stakeholders. Moreover, concrete international commitments to migration policy – which in many countries would lead to visible immigration flows – are controversial issues in domestic policy. International agreements addressing migration policy are also difficult to accomplish because the interests of states of origin, transit states, and host states are fundamentally different.

The fact that climate-related and environmental migration could nonetheless be established as an issue in international relations was due to the strong commitment of non-governmental organizations (NGOs), some departments belonging to international governmental organizations, and the initiative of a few states. NGOs inform the public and raise awareness, thus creating public concern, which can increase pressure on policy makers to take action. NGOs then develop a lobby for the populations concerned and provide the states affected with

100 Ionesco et al. 2017, p. 116

## Migration as an opportunity for countries of origin and host countries

In contrast to current political debate in Europe – which often views migration only as a threat that must be countered and staved off – academic debate frequently takes a completely different view.

Migration flows are regarded as natural processes in which people adapt to changes in living conditions and through which new perspectives are created for development. Many migration researchers believe that migration can be controlled to a certain extent but not stopped completely. Moreover, various fields of study from history to economics have shown that migration does not pose risks only, but also offers great opportunities for the countries of origin and the host countries. In recent years, climate scientists, NGOs, and responsible international organizations have repeatedly emphasized that mobility is an important adaptation strategy in response to climate change. Numerous empirical studies substantiate this point of view.

Opportunities for host societies and host countries are: migration can close gaps in the labor market; migrants can stimulate the economy by providing labor and increasing demand; and migrants, who are mostly young, can offset the problem of aging societies, particularly prevalent in industrialized countries. New, young workers pay into social security systems and their contributions can help to avoid financial gaps. Migrants also work as caregivers for older people. Moreover, there are many examples of people who are at home in two cultures and make important contributions to culture and science in their new and former home countries. Diaspora communities can contribute to a better understanding between different countries and cultures.

There are also opportunities for countries of origin and societies affected by climate change. Migration has always been a strategy used to adapt to deteriorating environmental conditions. Nomads, for example, move on when grazing lands become scarce. The (temporary) migration of individual household members or individual families of a community can make up for shortfalls in income when migrants tap into new sources of income and support their communities with remittances. Those who stay at home can use these remittances to buy food and medicine, pay for their children's schooling and finance investments such as the installation of irrigation systems for their fields and the building of safer houses. This allows communities to strengthen their resilience. Leaving vulnerable areas protects families from hazards and reduces the demographic pressure on fragile ecosystems, which also reduces risks to the community that stays behind. Returning migrants can share newly acquired knowledge and technologies with their native communities. Finally, diaspora groups can also take action as lobbyists, representing the interests of the people in their countries of origin, or their environmentally vulnerable native communities.

Sources: Scheffran 2015 and Melde 2017.

support in international climate negotiations. In this new and relatively unknown area, NGOs and informal transnational alliances play an important role in compiling data and providing expert analyses to develop common approaches and solutions. The IDMC and the Platform on Disaster Displacement (the former Nansen Initiative) are of particular importance here.

The IDMC – a global database for internal displacement due to natural disasters, violence and conflicts, often quoted by all organizations involved – is part of a Norwegian NGO, the Norwegian Refugee Council (NRC), and was set up in the late 1990s.<sup>101</sup> The IDMC is expanding its activities and also plans to focus more on collecting data on protracted internal displacement, urban displacement, and displacement in the context of slow-onset climate change.

Attempts to include the issue of environmental immigration in UNFCCC climate negotiations and to anchor the issue more firmly in the UNHCR initially failed due to the lack of government support. Norway and Switzerland then founded the transnational Nansen Initiative to collect information, conduct consultations, and create a basis for further debate, outside of international organizations, together with other particularly interested states.<sup>102</sup> The goal of the Nansen Initiative is to better protect those displaced persons forced to leave their countries due to natural disasters or climate change. In 2015, the Nansen Initiative presented its Protection

Agenda which has been signed by 109 states so far. In 2016, the Nansen Initiative was renamed and became the Platform on Disaster Displacement. It continues to work on the implementation of the Protection Agenda. Germany is currently the Chair of the platform, and Bangladesh will assume chairmanship in early 2018.<sup>103</sup>

The handling of environmental migration within international governmental organizations and panels, and cooperation between various organizations, have been expanded in recent years. In 2010, a framework agreement on adaptation to climate change, which promoted the cooperation of international organizations and led to the founding of a working group on climate change and human mobility in 2012, was negotiated at the Conference of the Parties to the Climate Change Convention in Cancún, Mexico. The working group has since then attempted to bolster the issue of migration in climate diplomacy.<sup>104</sup> In 2014, the IOM set up its own department on migration, environment and climate change.<sup>105</sup> Yet another UN secretariat addresses migration issues and coordinates various UN organizations that deal with climate change and disaster risk reduction.<sup>106</sup> The UN organizations are not only concerned with conceptualization, but also deal with the implementation of measures such as disaster relief. Cooperation with NGOs is very important in this area. In line with the cluster approach, which determines the responsibilities of various

<sup>101</sup> IDMC website, <http://www.internal-displacement.org/about-us/>

<sup>102</sup> Nansen Initiative 2015

<sup>103</sup> Platform on Disaster Displacement <http://disasterdisplacement.org/the-platform/our-response/>

<sup>104</sup> Advisory Group on Climate Change and Human Mobility 2016. Members include UNHCR, UNDP, IOM and several non-governmental organizations.

<sup>105</sup> The IOM, as a related organization, has been part of the United Nations system since September 2016.

<sup>106</sup> United Nations Office for Risk Reduction 2015

agencies, the UNHCR and the IOM are responsible for coordinating and managing refugee camps.<sup>107</sup> The UNHCR is responsible for camps related to conflicts while the IOM is responsible for camps related to natural disasters.

In 2015 and 2016, new global framework conventions were agreed under the umbrella of the UN which are intended to spur global cooperation through follow-up conferences and new processes. It is not surprising that in the run-up, several states close to the Nansen Initiative, UNHCR, IOM, and NGOs specialized in these issues, lobbied heavily to include regulations on migration and displacement, as well as climate change and environmental degradation, in agreements and follow-up conferences.

The UN conference for disaster preparedness in Sendai, Japan, adopted the Sendai Framework for Disaster Risk Reduction (SFDRR) in March 2015. The 187 signatory states committed to substantially mitigate the effects of natural disasters by 2030 through measures such as education, early warning systems, and financial aid programs in the event of a crisis. The goals include the reduction of the number of deaths caused by natural disasters in the period from 2020 to 2030 compared to the past ten years, and the reduction of the share of economic losses from natural disasters in relation to global gross domestic product (GDP) by 2030. The signatory states further agreed to regularly compile reports on their activities within the framework of the Sendai agreement. Wealthy industrialized nations declared that they will assist developing nations in implementing these goals by providing financial aid and technology transfer for early warning systems.

However, the commitments of industrialized nations fell far short of developing countries' expectations. They were unable to elicit any binding aid promises and failed to push through "additional and predictable funding". Instead, the text contains the vague promise of "adequate and sustained" support in the event of natural disasters. At the UN conference, the development program of the United Nations (UNDP) presented its new "5-10-50" program in support of disaster resilience.<sup>108</sup> It targets fifty countries that are to receive help over ten years in five critical areas: risk awareness and early warning; risk governance that addresses risks (mainstreaming); preparedness; resilient recovery; and local and urban risk recovery. Research on disaster preparedness has long focused on prevention. But this is far from being a matter of course in politics.<sup>109</sup> Therefore, an important function of the Sendai agreement is to commit the countries most affected as well as the countries providing development aid to prevention measures and cooperation in improving the protection of people in disaster-prone areas. The obligation to report will allow the interested public and other states and international organizations to access information on the actual contributions of signatory states to disaster preparedness within the framework of the agreement. This system of 'naming and shaming' is meant to foster more commitment.

The connection between natural disasters, climate change, and migration was the subject of controversy and intense debate at the conference, causing a disruption in the conference program, which ended only after several extensions. Margareta Wahlström, head of the UN Office for Disaster Risk Reduction, emphasized that 80 percent of all natural disasters are related to climate change and greatly contribute to displacement. Then UN Secretary General Ban-Ki Moon said, "We are playing with fire."<sup>110</sup> He continued: "There is a very real possibility that disaster risk, fueled by climate change, will reach a tipping point beyond which the effort and

resources necessary to reduce it will exceed the capacity of future generations." Conference delegates from Bangladesh, Norway, the Philippines and Switzerland are reported to have fought hard to include the critical issues of displacement and resettlement and were partly successful.<sup>111</sup> As a result, reducing the number of persons displaced by natural disasters has been formulated as a key role. Moreover, the Sendai agreement draws a differentiated picture of the connection between disasters and migration. Migration is viewed as a potential driver of risk, both for migrants and host societies. According to the document, however, migration can also diminish the risk of natural disasters and lead to the building of resilience. The document also includes a positive statement on migrants, noting that their knowledge and skills can be helpful in reducing natural disaster risks.<sup>112</sup> The Nansen Initiative views the Sendai Framework Agreement as an important step toward the better protection of persons displaced by natural disasters. For example, the framework stresses that groups of people disproportionately affected, such as internally displaced persons, are to be empowered and given access to decision-making processes that affect them without discrimination.<sup>113</sup>

At a UN summit in September 2015, the Agenda 2030 adopted sustainable development goals (SDGs) for the next fifteen years. These SDGs aim to end poverty by 2030, to combat inequality and injustice, and mitigate climate change.<sup>114</sup> These development goals also explicitly include migration policies and the role of migrants, their communities, and the diaspora. This is thought to be a sign of progress, as the earlier development goals, the Millennium Development Goals, did not address the issue of migration.<sup>115</sup> Environmental migration, however, is not explicitly addressed in the SDGs.

At the UN climate summit in Paris in December 2015, a new agreement against global warming, which has since gone into force, was negotiated by 195 states. States set themselves the goal of limiting global warming to "well below" 2 degrees Celsius over pre-industrial levels, and to encourage efforts to actually limit the temperature increase to 1.5 degrees Celsius. In the second half of the century, the goal is to achieve a balance between anthropogenic emissions of greenhouse gases and the amount of CO<sub>2</sub> absorbed by sinks. The agreement leaves it largely to the signatory states to decide on the climate protection measures they wish to implement. The agreement trusts that the principle of "naming and shaming" will induce states to increase their climate protection efforts, despite the lack of sanctions legitimized under international law. Therefore, as in the Sendai agreement, an obligation to compile reports was agreed. In the national statements, called the Intended Nationally Determined Contributions (INDCs), states must announce their emissions reduction goals and the obligations they intend to implement at a national level. Industrialized countries are to support developing countries in climate protection and adaptation to global warming. A related decision documents the promise made by industrialized countries to make USD 100 billion per year available to poor countries as of 2020. This amount will be provided every year until 2025.

Anyone hoping that the Paris Climate Agreement would achieve a breakthrough regarding environmental migration and displacement was disappointed. These issues were in fact the subject of much debate during the complex negotiating process. The obligations of states regarding migrants are mentioned in

107 Ionesco et al. 2017, p. 117

108 www.klimaretter.info 2015

109 A state secretary of the German Ministry of Economic Cooperation expressed self-criticism, explaining that: "It is often difficult for politicians to spend money for something that cannot yet be seen." Silberhorn 2015.

110 Quoted according to Singh 2015.

111 Kälin 2015 a

112 Sendai Framework for Disaster Risk Reduction 2015. Paragraph 36 IV.

113 See Kälin 2015 a

114 United Nations Association of Germany 2016

115 Ionesco 2017



several parts of the agreement.<sup>116</sup> Furthermore, a task force on displacement was established to develop recommendations for integrated approaches to avoid and minimize displacement related to the adverse effects of climate change. This means that negotiations will continue, as will the struggle for attention and specific agreements—but no broader and binding obligations exist.

The UN General Assembly adopted the New York Declaration for Refugees and Migrants in September 2016. Climate change and environmental degradation are cited in the very first paragraph of this resolution as causes for flight and migration, and are linked to other motives: “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.”<sup>117</sup> Representatives of the UNHCR called this document a small wonder, as it reaffirmed – despite a difficult political environment – the promises of all states to protect refugees and migrants. Whether the New York Declaration will contribute to an improvement in international cooperation in terms of protecting refugees will not be seen until the annexed statement, the Comprehensive Refugee Response Framework, is formulated and adopted in 2017.

We can only hope that the framework agreement sets up panels in which specific progress is achieved in the fight against global warming and for the people whose lives it affects. Work at all levels must persevere to build pressure and strengthen the understanding that climate, environmental, and migration policies must be a vital element of future-oriented political action.

## 6. Summary

Today, climate change and environmental degradation are already important triggers of displacement and migration. The consequences of climate change, such as prolonged heat waves, more frequent droughts, sea level rise, floods and an increase in extreme storms are destroying the livelihoods of a growing number of people. Extreme weather events already displace twice as many people as war or violence do. Moreover, millions of people are leaving their homes because gradual environmental degradation – to which climate change is often a contributor – is destroying their livelihoods. Even measures such as the use of land for the cultivation of biofuels, exporting food, and flood protection barriers, which are designed to protect our climate and facilitate adaptation, can result in further displacement. Scientists fear that if the release of greenhouse gases into the atmosphere is not stopped, by the end of this century every tenth person will be living in an area affected in multiple ways by the consequences of climate change.<sup>118</sup> Displacement and migration should be understood as a signal to finally take seriously the fight against climate change, to promptly implement the goals of the Paris Climate Agreement, and expedite the phaseout of fossil fuels.

Contrary to what one might expect, there are more migration flows to high-risk areas than from high-risk areas. This is particularly evident in the rapid population growth of coastal megacities and river deltas, both of which are especially exposed to hazards through sea level rise and river flooding. There are no reliable figures on how many people are suffering from long-term displacement and have been living, often for years, in the slums of growing cities, makeshift camps and emergency shelters. The major share of environmental migration takes place in the Global South and within national boundaries. However, it is difficult to predict how migration flows would change if global warming progresses. In addition to a further increase in migration, the forced immobility of trapped populations is likely to increase considerably. These include populations whose livelihoods have been destroyed, or who are exposed to tremendous risks, but who lack the resources to migrate, or have no access to escape routes and places of refuge. The current humanitarian crisis in the Horn of Africa and Yemen is a frightening example of helplessly

trapped populations. The precarious living conditions of people who are particularly affected by the consequences of climate change and environmental degradation show that great efforts must be made to better protect them. Unfortunately, important players of bilateral and multilateral development cooperation, from the World Bank to the EU and the Green Climate Fund (GCF), still too often follow the logic of ‘moving money’, which reflects their preference for a few large projects instead of trying to effectively reach the people concerned with many small and decentralized projects. When it comes to a tangible improvement in people’s living conditions, the bureaucratic logic of these aid organizations should not be allowed to take center stage; the rapid movement of money is often of greater importance to them than the sustainable improvement of the precarious conditions of affected populations and their successful adaptation to changing conditions.

In the future, many more people will have to avail themselves of innovative protective measures currently being developed for problem areas. Urban development must overcome immense challenges before cities can become livable and sustainable places able to cope with further population growth. Prompt industrial and social adaptation to global warming is a matter of survival, but the problem is still underestimated and ignored.

In Germany, many aspects are not given enough attention in the public debate on flight and migration. The debate needs to be broadened so we can come up with solutions. The following aspects should be given more weight: migration flows are natural processes with which people adapt to changes in living conditions. Migration can be controlled to a certain extent, but not completely stopped. Compared to other parts of the world, Europe is relatively unaffected by migration. A look at various fields of study, from history to economics, has shown that migration does not only pose risks, but also offers great opportunities for both countries of origin and host countries. Migration can close gaps in the labor market; migrants can stimulate the economy by providing labor power and increasing demand; and migrants, who are mostly young, can offset the problem of aging societies, particularly prevalent in industrialized states. Migrants also work as caregivers for older people. There are many examples of people who are at home in

<sup>116</sup> UNHCR 2016

<sup>117</sup> Resolution of the UN General Assembly of 19 September 2016. New York Declaration for Refugees and Migrants. [http://www.un.org/en/development/desa/population/migration/generalassembly/docs/A\\_RES\\_71\\_1\\_E.pdf](http://www.un.org/en/development/desa/population/migration/generalassembly/docs/A_RES_71_1_E.pdf).

<sup>118</sup> Potsdam Institute for Climate Impact Research 2013

two cultures and make important contributions to culture and science in their new and former home countries.

Based on objectives formulated by the IOM, we can define three goals for the management of environmental migration which should also serve as a benchmark for policymakers. Firstly, forced migration should be avoided; secondly, migrants should be supported and protected when forced migration has occurred; thirdly, migration is an important adaptation strategy in response to climate change and must therefore be promoted.

Observations made by climate researchers and those involved in development cooperation and disaster relief confirm the relevance of these three demands. When the vulnerability of the population diminishes, forced migration can often be avoided, for example, by constructing houses that are sturdy and cool, installing water-saving irrigation systems for agriculture, and early warning systems for storms and flooding. Many case studies consistently show that mobility itself is a fundamental step toward adapting to climate change. Migration can greatly alleviate crisis situations and prevent forced migration later on. Families protect themselves from hazards when they leave high-risk areas. They reduce demographic pressure on fragile ecosystems, which also reduces risks to the population that stays behind. Remittances from migrants are of fundamental importance for the resilience of communities in crisis regions. The importance of these remittances is reflected not least by the fact that in many developing countries, they are higher than allocations through development cooperation with the Global North. Returning migrants can share newly acquired knowledge and technologies with their native communities. Finally, diaspora groups can also take action as lobbyists representing the interests of the people in their countries of origin or their environmentally vulnerable native communities.

With the Paris Climate Agreement, the Sendai Framework for Disaster Risk Reduction, the New York Declaration for Refugees and Migrants, and the Sustainable Development Goals (SDGs) several global agreements have been concluded and processes initiated within the framework of the UN in recent years; this at least reflects the growing international attention accorded to people in vulnerable regions, people displaced by disasters, and environmental migrants. Steps toward migration policies based on solidarity and human rights have been formulated in these UN documents. The signatory states have committed themselves, at least on paper, and the observance of these commitments are

the benchmarks against which governments and the EU will be measured. The signatories to the New York Declaration are committed, among other things, to protecting the human rights of all refugees and migrants, regardless of status and gender. They are to support countries receiving and hosting many refugees and migrants, and honor contributions made by migrants to their host countries. In autumn of 2018, the UN General Assembly plans to hold an intergovernmental conference on international migration with the goal of adopting a global compact for safe, orderly and regular migration. This would be the first global agreement to be adopted under the umbrella of the United Nations to deal comprehensively with all aspects of international migration.

We are still a long way from a complex set of rules and regulations, based on human rights, that protects environmental migrants. This makes it all the more important to continue to look for pragmatic solutions to facilitate migration through the promotion of safe, legal and circular paths to labor migration, through national humanitarian admissions programs, through the UNHCR Resettlement initiative, and through regional agreements. In view of the humanitarian crisis taking place in the Mediterranean, Europe in particular should be willing to rethink its refugee policies and create safe access routes. In the further development of a common European refugee and migration policy, the walls around Europe should not be raised further. The contents of a planned EU resettlement scheme are currently the subject of controversy. Aid organizations and members of the European Parliament fear that the scheme could transform resettlement in Europe to an instrument of migration control and limit national absorption capacities as a whole.

The real problem of international migration and refugee policy is not the lack of international statements of intent, but rather the behavior of key players. As long as the challenge posed by the major transition to a post-fossil economy and society has not been recognized and accepted by everyone, and as long as the corresponding changes in behavior of all those involved – individuals, groups and states – are not addressed more seriously, the planet will continue to experience natural disasters which do not (yet) affect some of us, but bring great suffering to the poorest of the poor who are the least to blame for their occurrence. We can simply no longer afford to continue to underestimate and ignore these catastrophic events.

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