UNIVERSITÀ DEGLI STUDI DI PADOVA

DIPARTIMENTO DI SCIENZE POLITICHE, GIURIDICHE E STUDI INTERNAZIONALI

Corso di laurea Magistrale in Relazioni internazionali e Diplomazia

TESI DI LAUREA

A "Flood" of Migrants? How Climate Change Will Affect Migrations from the Global South: A Study of the Sahel Region in Africa and the Wider Caribbean Region in Latin America

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ANNO ACCADEMICO 2021-2022

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Abstract

Climate change represents one of the most pressing and daunting problems our modern society will have to face in the XXI century. Humankind have been contributing, directly or indirectly, to the exacerbation of the planet's climatic conditions for at least one century, creating dangerous implications for local ecosystems and populations around the globe. Countries that contributed the least to the exacerbation of the earth's climate will represent those actors compelled to pay the highest price – in social, environmental and economic terms. Moreover, considering that climate change will extremely affect people's livelihoods in developing countries, repercussions will be also reflected on future migration flows coming from these areas. Yet, confusion characterises the international policy framework on this topic, which is still not ready to protect environmental migrants (or refugees) and address certain problematics. In order to find feasible solutions for the safety of these people at the local, regional and global levels, further serious commitment must be undertaken by all the stakeholders involved: international organisations, national and regional authorities, as well as the academic world and the civil society. Two examples - the Sahel region in Africa and the Wider Caribbean region in Latin America - are analysed in this thesis in order to provide a better understanding of the issues of climate change, migrations and the relationship between the two phenomena. In addition, different adaptation strategies carried out in situ are also introduced to analyse possible solutions aimed at tacking climate change and halting migration flows from these territories.

I cambiamenti climatici rappresentano uno dei problemi più urgenti e spaventosi che la nostra società moderna dovrà affrontare nel XXI secolo. L'umanità, direttamente o indirettamente, ha contribuito all'inasprimento delle condizioni climatiche del nostro pianeta per almeno un secolo, provocando diverse conseguenze per le varie popolazioni ed ecosistemi nel mondo. Tuttavia, le nazioni che hanno contribuito di meno al peggioramento delle condizioni climatiche del pianeta saranno coloro che dovranno pagare il prezzo più alto – sul piano economico, ambientale e sociale. Inoltre, considerando che i cambiamenti climatici influenzeranno notevolmente le fonti di sostentamento di diverse popolazioni, le ripercussioni si rifletteranno indubbiamente anche sui flussi migratori provenienti da questi paesi. Ancora tanta confusione caratterizza il quadro politico internazionale riguardante questi temi, il quale non è ancora pronto a tutelare queste persone e affrontare specifiche problematiche. Proprio per questo motivo è necessario un maggiore e più forte impegno da parte di istituzioni e organizzazioni nazionali e regionali, così come di organizzazioni internazionali, il mondo accademico e la società civile, in modo da provvedere a trovare possibili soluzioni per salvaguardare queste persone a livello locale, nazionale ed internazionale. Due esempi - la regione del Sahel in Africa e i Caraibi in America Latina - sono analizzati per fare maggiore chiarezza riguardo i cambiamenti climatici, le migrazioni e la relazione tra questi due fenomeni. In aggiunta, diverse strategie di adattamento in situ sono state introdotte in modo da analizzare possibili soluzioni mirate a contrastare i cambiamenti climatici e rallentare il fenomeno delle migrazioni da questi territori.

Introduction

In the last century, both slow-onset events (e.g. desertification, sea-level rise, coastal erosion) and sudden-onset disasters (e.g. tropical typhons, hurricanes, floods, heatwaves) have extremely increased in frequency and intensity. Scientists around the world had long suspected that human activities were contributing, directly or indirectly, to influence changing patterns in our planet's climate, however, technologies were poor and data as well as evidence were lacking. What seemed to be only possible, futuristic conjectures has become today one of the most daunting and challenging problems that our modern society will probably have to face in the XXI century.

Although climate change is not something new, it seems it has caught international attention only recently. In the face of the occurrence of an increasing number of natural disasters worldwide and a deeper concern of the civil society (e.g. Fridays for Future), international organisations as well as policymakers have rushed to adopt stronger and more effective laws and regulations in order to fight the threat of climate change and its dangerous implications. The last "Conference of the Parties" (COP26) held in Glasgow from the 31st of October to the 12th of November 2021 – i.e. the annual United Nations climate conference where negotiators representing almost every country of the world meet to agree on a global approach to fight climate change -,[1] seems also to confirm this trend. Yet, other examples are in the public eye: the 1992 United Nations Framework Convention (UNFCCC), the 1997 Kyoto Protocol, the 2010 Cancun Agreement, the 2015 Paris Agreement, and the EU Green Deal.

However, since 1988, year in which the Intergovernmental Panel on Climate Change (IPCC) was established, the UN body for assessing the science related to climate change has provided political leaders, "periodic scientific assessments concerning climate change, its implications and risks, as well as to put forward adaptation and mitigation strategies".[2] In reality, despite what many believe, the IPCC does not conduct its own research; in contrast, scientists review the thousands of papers published every year on the subject in order to identify evidence where

[1] European Commission, "*Why is COP26 such a big deal? Here's everything you need to know",* EU, 2021. Available at: https://europa.eu/climate-pact/news/why-cop26-such-big-deal-heres-everything-you-need-know-2021-10-28_en?pk_source=ads&pk_medium=social_media_paid&pk_campaign=article_boosting&pk_content=facebook&fbclid=PAAaZFOounKuaNIQGOY2_1y0mPZLnFRDqkJq58CN49BsCHZ6C-BVkMs-Q0KJ4

[2] IPCC, *About the IPCC*, accessed on 13/10/2021. Available at: https://www.ipcc.ch/2021/05/28/press-release-ar6-wgii-wgiii-syr-approval-sessions/

the scientific community agrees, where it disagrees and where further research is needed.[3] The IPCC has thus long highlighted that climate change is a real threat and that humankind must act now in order to reverse a negative trend, which could even have serious implications for our own survival. Indeed, as scientists around the world claim, it is now unequivocal that the increase of greenhouse gas (GHG) concentrations in the atmosphere, sea-level rise, the change in rainfall patterns as well as the increase in the frequency and intensity of desertification, the retreat of glaciers and other sudden-onset events (e.g. heavy precipitations, floods, hurricanes, etc.) are surely caused by human activities.[4] In addition, as the following graph displays, "human influence has warmed the climate at a rate that is unprecedent in at least 2000 years",[5] which of course will lead to dreadful repercussions if we will not be able to limit this increase to 1.5°C above pre-industrial levels.[6]

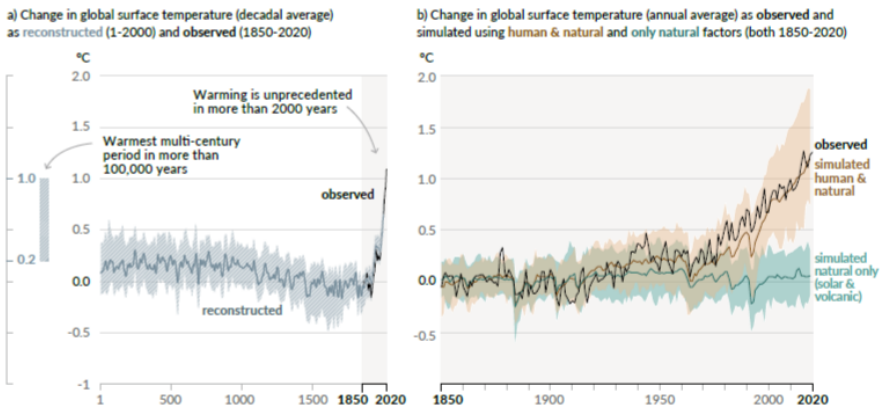

Figure i.1. Change in global surface temperature, IPCC, Sixth IPCC Report, 2021

This thesis, however, not only will it deepen climate change and the exacerbation of atmospheric events in the XXI century, but it will also focus on highlighting a possible nexus between climate change and the phenomenon of migration. As a matter of fact, in the last few decades, politicians, environmentalists as well as the media have increasingly stressed that the effects of climate change, particularly sea-level rise, change in rainfall patterns and extreme weather events (e.g. floods and hurricanes) will lead to massive population displacement, especially from the poorer countries of the Global South to the richer countries of the Global

[3] Intergovernmental Panel on Climate Change, *The IPCC and the Sixth Assessment Cycle*, 2020. Available at: https://www.ipcc.ch/site/assets/uploads/2020/05/2020-AC6_en.pdf
[4] Intergovernmental Panel on Climate Change (IPCC), *Summary for Policymakers in Climate Change 2021: The Physical Science Basis, Working Group I contribution to the Sixth Assessment Report of the IPCC*, Cambridge University Press, 2021, p.6
[5] *Ibid*.
[6] Bruce Lieberman, *"1.5 or 2 degrees Celsius of additional global warming: Does it make a difference?"*, Yale Climate Connections, 2021. Available at: https://yaleclimateconnections.org/2021/08/1-5-or-2-degrees-celsius-of-additional-global-warming-does-it-make-a-difference/

North.[7] Yet, due to the great uncertainty behind the exact consequences of climate change on migration flows (e.g. how many people will move, when it will happen, where they will go, what kind of adaptation strategies will be developed, etc.), two different schools of thought has arisen: the "maximalists", commonly known as the alarmists, and the "minimalists", also known as the sceptics.[8]

As easily understandable, academics from the first school of thought, the maximalists, have publicised alarmistic scenarios, predicting the displacement of floods of people over the decades, particularly from developing countries. Already in 1995, the British environmentalist specialised in biodiversity Norman Myers – one of the most influential scholars in his field –, in his publication *Environmental Exodus*, drew attention to the dangerous nexus between climate change and migration, claiming that there were already 25 million "environmental refugees" worldwide at the time and that the number was likely to increase to 200 million by 2050.[9] Ten years later, following a similar approach, the United Nations Environmental Programme (UNEP) forecasted the migration of more than 50 million environmental refugees from the Global South escaping the dire consequences of climate change – a report that was quickly removed from the UNEP website when expectations failed to materialise.[10] In his book *Stern Review: The Economics of Climate Change*, Michael Jacobs once again explored the climate change-migration nexus, emphasising the need for the world to address the problem of 200 million permanently-displaced people by the middle of the XXI century.[11] Finally, on the same page, in 2007, Christian Aid, a British-based NGO providing "humanitarian relief and long-term development support for poor communities worldwide",[12] further escalated these forecasts in a report named *Human Tide: The Real Migration Crisis*, highlighting that people displacement due to climate change could even reach one billion by 2050.[13]

The displacement of people in response to environmental changes towards territories with more favourable conditions should not be surprising since it has always represented a common trait

[7] Hein De Haas, *Climate refugees: The fabrication of a migration threa*t, HeindeHaas Blog, 2020. Available at: https://heindehaas.blogspot.com/2020/01/climate-refugees-fabrication-of.html?spref=tw
[8] Walter Kaelin and Nina Schrepfer, P*rotecting People Crossing Borders in the Context of Climate Change: Normative Gaps and Approaches*, UNHCR, 2012, p.11
[9] Norman Myers and Jennifer Kent, *Environmental Exodus: An emergent crisis in the global arena*, Climate Institute, 1995, p.1
[10] Axel Bojanowski, "*UN Embarassed by Forecast on Climate Refugees"*, Spiegel International, 2011. Available at: https://www.spiegel.de/international/world/feared-migration-hasn-t-happened-un-embarrassed-by-forecast-on-climate-refugees-a-757713.html
[11] Michael Jacobs, *Stern Review: The Economics of Climate Change*, Cambridge, 2006, p.6
[12] Christian Aid, Our History, *Christian Aid: About us*, accessed on 07/11/2021. Available at: https://www.christianaid.org.uk/our-work/about-us/our-history
[13] Rachel Baird et al, *Human tide: the real migration crisis*, Christian Aid, 2007, p.5

of humankind. Some scholars have even argued that changing environmental features likely led to the rise and fall of different empires around the world in the past millennia.[14] For example, as stated in his 1907 publication *The Pulse of Asia*, Ellsworth Huntington believed that the great barbarian invasions, one of the consequences that led to the fall of the Roman Empire, were caused by climate change – i.e. the worsening of climatic conditions in Eastern Asia and the improvement of the climate in the European continent.[15] At the same time, one should question whether these predictions are based on solid evidence and actually represent the reality. In this context, as mentioned before, a second group of theorists, the so-called minimalists, has emerged in the first decades of the XXI century, highlighting instead the complexity of the climate change-migration linkage. As the British Foresight Study correctly points out, one should also understand that the phenomenon of migrations can be rarely reduced to the effects of one single factor, such as climate change or other environmental factors.[16] In contrast, it has become increasingly clear that a set of different elements, both at the macro- (e.g. adaptation capacity and vulnerability of a given country) and micro level (e.g. age, gender, financial capacity), are fundamental and can influence a person's final decision to migrate. As sceptics claim, "environmental stressors do not necessarily lead to migration, and indeed there is a growing realisation that some of the people most vulnerable to environmental changes will be those who are unable to move".[17]

At this point, one could legitimately question why different scholars, politicians, non-governmental organisations and the media prioritise speculative, alarmist predictions over pragmatic or sceptic ones. As it will also be explained later, the main reason seems to be the powerful implications that the climate change-migration nexus reflect on the political scenario, both on the right and on left side of the pendulum. De Haas in fact claims that,

"for left-wings groups, [alarmist predictions] serve to raise attention to the issue of climate change; for researchers and international organizations, it seems to serve fundraising purposes; [finally], for right-wings groups, it serves to raise the spectre of future mass migration and the need to step up border controls to prevent such an imagined deluge".[18]

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[14] Susanne Melde, Frank Laczko and Francois Gemenne, *Making Mobility Work for Adaptation to Environmental Changes: Results from the MECLEP global research*, International Organization for Migration (IOM), 2017, p.8

[15] Etienne Piguet, *From "Primitive Migration" to "Climate Refugees": The Curious Fate of the Natural Environment in Migration Studies* in Migration Studies, Annals of the Association of American Geographers, 2013, p.150

[16] Richard Black et al, *Foresight: Migration and Global Environmental Change – Final Project Report*, The Government Office for Science, 2011

[17] Alex Flavell, Andrea Milan and Susanne Melde, *Migration, environment and climate change: Literature review - First report in the "Migration, environment and climate change" series*, German Environment Agency, 2020, p.5

[18] De Haas, *Climate refugees*, cit.

In relation to this last point, let's not forget that migrants are also commonly used as scapegoats for larger socio-economic structural problems, including strong pressure on urban areas, spread of crime and different diseases, land degradation, and increase of poverty.[19]

But who are these people? How can we identify them? Are they refugees, migrants or something different? The recognition of a specific status for these people represents one of the most debated arguments in this context and more clarity would be needed. The term 'environmental refugee' was firstly used by the American environmentalist Lester Brown in Science Magazine in 1970 and was expanded by UNEP researcher Essam El-Hinnawi in 1985, who defined them as "those people who have been forced to leave their traditional habitat, temporarily or permanently, because of a marked environmental disruption (natural and/or triggered by people) that jeopardized their existence and/or seriously affected the quality of their life".[20] By providing this definition, El-Hinnawi identified three types of environmental refugees: those temporarily dislocated due to disasters - whether natural or anthropogenic-; those permanently displaced due to drastic environmental changes; and those who migrate based on the gradual deterioration of environmental conditions.[21] In reality, he also integrated a fourth, small category of environmental refugees in this list; that is to say those people who were displaced by the destruction of their environment as an act of warfare.[22]

Legally speaking, however, people escaping the dire consequences of climate change, particularly slow-onset events (e.g sea-level rise, desertification, droughts), do not enjoy a particularly protected status and, as such, cannot be recognised as refugees. This type of migrations is in fact characterised by the willingness of the migrant(s) to move away from a given territory for the most diverse reasons, say a wealthier life or economic improvement, which highlights in a way a voluntary choice. Yet, in order to enjoy this special status, as clearly stated in article 1 of the 1951 United Nations Convention on Refugees, refugees do not have other choice but to flee their countries due to a

"well-founded fear of being persecuted for reasons of race, religion, nationality, membership of a particular social group or political opinion, [who] is outside the country of his nationality and is unable or, owing to such fear, is unwilling to avail himself of the protection of that country; or who, not having a nationality and being outside the

[19] Susanne Melde et al, *Making Mobility Work for Adaptation to Environmental Changes*, cit., p.10
[20] Maurizio Gubbioti, Tiziana Finelli and Peruzzi Elena, "*Profughi Ambientali: Cambiamento climatico e migrazioni forzate"*, Legambiente Onlus, 2012, p.13
[21] Diane Bates, *Environmental Refugees? Classifying Human Migrations Caused by Environmental Change, Population and Environment*, Vol 23, No.5, 2002, p.469
[22] *Ibid*.

country of his former habitual residence as a result of such events, is unable or, owing to such fear, is unwilling to return to it".[23]

Therefore, since the 1951 United Nations Convention on Refugees is an old mechanism established after WW2, 'environmental refugees' do not meet these criteria and cannot be recognised as such. As it will be later deepened in this thesis, numerous scholars and international organisations prefer to use a different terminology when referring to people fleeing from the effects of climate change, including environmental migrants or environmentally displaced persons.

Finally, one last important element that should be introduced regards the distance as well as the duration of migration in the context of climate change - in other words how far people will travel and how long they will stay away from their place of origin. Despite alarmist scenarios predicting "waves" or "floods" of migrants from poor, developing countries who will try to settle permanently in the richest countries of the Global North, the truth is slightly different. Indeed, an increasing number of scholars and researchers point out that most of these people tend to move internally and follow a circular pattern, that is to say that their main objective is not to relocate permanently but, in contrast, when possible, to quickly return home.[24] In addition, when people decide to cross national borders, these migrations tend to be directed towards neighbouring countries rather than overseas.[25] This is given by a set of different reasons, particularly the costs of long-distance journeys, immigration restrictions, cultural as well as language shocks and, as already said, proximity to the place of origin.[26]

Research Question

This thesis investigates the relationship between the phenomena of climate change and migrations, highlighting how the exacerbation of climatic conditions can lead to the displacement of people. Throughout the chapters, the dissertation attempts to answer its research question "*in which ways is climate change affecting the phenomenon of migrations from the Global South, more precisely from the Sahel region in Africa and the Wider Caribbean*

[23] UNHCR Communications and Public Information Service, *Convention and Protocol relating the Status of Refugees*, UNHCR, 2010, p.14. Available at: https://www.unhcr.org/3b66c2aa10.html
[24] Clionadh Raleigh, Lisa Jordan and Idean Salehyan, *Assessing the Impact of Climate Change on Migration and Conflict*, World bank Group, 2008, p.20
[25] Alex Flavell et al*, Migration, environment and climate change*, cit., p.12
[26] Food and Agriculture Organization of the United Nations, the International Fund for Agriculture Development, the International Organization for Migration and the World Food Programme, *The Linkages between Migration, Agriculture, Food Security and Rural Development*, 2018, p.4

Region in Latin America, towards areas that offer more favourable climate conditions as well as a healthier and safer life?".

Both migration and climate change represent today two of the most heated and contested topics in the public debate. Not only the media, but also NGOs and politicians, among others, have been using inaccurate statements and data at their advantages in the context of the climate change-migration nexus – for example to raise more attention, more funds or more votes. Yet, this clearly have political, social and cultural repercussions in our society. As such, more clarity is needed and this is the reason that led me to choose this topic. In addition, although being aware of the strong implications that climate change has had (and will have in the future) in the Asian continent, this thesis focuses on the African and Latin America regions because of their proximity to the so-called "Western countries" – i.e. the European Union and the United States of America. Furthermore, the two case studies - the Sahel region in Africa and the Caribbeans in Latin America - were chosen because they represent two of the most affected regions in the world by climate change, thus having strong consequences on the phenomenon of migration.

Literature Review – State of the Art

The literature on climate change, migrations as well as the relationship between the two phenomena is extremely rich and it has been growing fast in the last few decades. In addition, while virtually all the academic world agrees on an existing linkage between climate change and human activities, theories on a possible nexus between climate change and migrations highly differ among each other and must be analysed more in detail.

Since its first publication in 1990, although with a softer degree of certainty, the Intergovernmental Panel on Climate Change (IPCC) has always been concerned "that human activities may be inadvertently changing the climate of the globe through the enhanced greenhouse effect […] which will cause the temperature of the Earth's surface to increase—popularly termed the global warming –, [having] a significant impact on society".[27] Over the decades, with an increasing number of studies as well as an improvement of technologies and data collection, this degree of uncertainty has gradually shrunk. In its latest publication, the IPCC has strongly asserted that besides the fact that climate change is unequivocally caused by

[27] Intergovernmental Panel on Climate Change, *Policymaker Summary of Working Group (Scientific Assessment of Climate Change)*, IPCC, 1990, p.65. Available at: https://www.ipcc.ch/site/assets/uploads/2018/05/ipcc_90_92_assessments_far_wg_I_spm.pdf

human activities and is affecting every region on Earth,[28] "the scale of recent changes across the climate system as a whole and the present state of many aspects of climate system are unprecedent over many centuries to many thousands of years".[29] Further and stronger actions to tackle the issue are therefore needed now, otherwise "climate-related events [will pose even greater] risks to our society through impacts on health, food and water security, as well as human security, livelihoods, economies, infrastructure and biodiversity".[30] In addition, it must also be recalled, as Kraler et al. emphasise, that "while climate change is a global problem, its impacts are unevenly distributed and are most heavily felt in poorer countries".[31]

Yet, "even if global climate change is brought under control sooner rather than later, carbon dioxide already in the atmosphere will continue to affect the earth's climate, [thus increasingly influencing] the ability of some humans to subsist in their current locations".[32] In this context, as also highlighted by the World Meteorological Organization, "climate and weather events [are responsible for] major and diverse impacts on population movements and on the vulnerability of people, [forcing] people pushed from their homes by the effects of climate change to face with the questions of where and how to relocate families and livelihoods".[33] The climate change-migration nexus has therefore attracted quite a lot of international attention recently, especially in the 'Western world', since an important number of scholars has highlighted the fact that developed countries will be soon flooded with environmental refugees – as Cecilia Tacoli highlights the amount of environmental refugees ranges vary from 200 million to 1 billion.[34]

Flavell at al. claim however that "references to environmental factors in theories seeking to explain migration [are not something new and were] identified by early theorists of migrations already at the end of the IXX century, [but they then] disappeared in the XX century due to the [growing importance] of economic factors at the individual level".[35] In 1958, Petersen argues that "migration resulting from environmental factors ('ecological push') is indeed the first form

[28] Intergovernmental Panel on Climate Change, *Climate change widespread, rapid, and intensifying*, IPCC, accessed on 11/11/2021. Available at: https://www.ipcc.ch/2021/08/09/ar6-wg1-20210809-pr/
[29] Intergovernmental Panel on Climate Change, *Summary for Policymakers in Climate Change 2021*, cit., p.9
[30] World Meteorological Organization, *State of the Global Climate 2020,* WMO-No. 1264, 2021, p.34
[31] Albert Kraler, Caitlin Katsiaficas, and Martin Wagner, *Climate Change and Migration: Legal and policy challenges and responses to environmentally induced migration*, European Parliament, 2020, p.28
[32] Michael Werz and Laura Conley, *Climate Change, Migration, and Conflict: Addressing complex crisis scenarios in the 21st Century*, Center for American Progress, 2012, p.20
[33] *Ibid.*
[34] Cecilia Tacoli, *Crisis or adaptation? Migration and climate change in a context of high mobility*, Environment & Urbanization, Vol.21(2), 2009
[35] Alex Flavell et al*, Migration, environment and climate change*, cit., p.31

of migration in history due to man's inability to cope with natural forces".[36] Other theories emerged over the decades; yet, all of them focused more on economic factors rather than environmental ones, as it can be easily recognised in the 1980s New Economics of Labour Migration (NELP) model. As Piguet stresses in his publication *From Primitive Migration to Climate Refugees*, the disappearance of environmental factors from migration studies has to be identified in four elements: "the Western idea that progress implies a decreasing impact of nature on human fate, the demise of determinism, the rise of an economic paradigm in migration theory, and the constitution of the specific field of refugee studies around a political paradigm".[37]

Furthermore, existing literature is extremely abundant as regards the attempt of the academia to categorise those people who are escaping climate change impacts. Over the decades, these people have been labelled as 'climate/environmental refugees'[38] or 'environmental induced migrants'.[39] Yet, as different scholars have already emphasised, in a way, both terms are incorrect; indeed, while the term environmental refugee is legally not acceptable under the 1951 United Nations Convention on Refugees, environmental migrant could also imply a voluntary connotation. In this regard, as an alternative, new terms have been created: environmental displaced person – also known as internal environmental displaced person since the majority of these movements take place within national borders -,[40] 'environmentally-induced populations', 'eco-migrants', 'climigrants', 'environmentally motivated migrants' and 'envirogees'.[41]

In the past decades, scholars have increasingly focused on studying the impacts of climate change on migration patterns both in Africa and Latin American countries. These regions will be those most affected by the effects of climate change and, as such, as many academics highlight, this phenomenon will have strong repercussions also on migration flows.[42] In this context, in a study carried out by the Internal Displacement Monitoring Centre (IDMC), it was discovered that the Latin American region as a whole accounted for 24 per cent of displacement

[36] Etienne Piguet, *From "Primitive Migration" to "Climate Refugees"*, cit., p.151
[37] Ibid.
[38] Essam El-Hinnawi, *Environmental Refugees*, United Nations Environment Programme, 1985, p.4
[39] Susanne Melde et al, *Making Mobility Work for Adaptation to Environmental Changes*, cit., p.7
[40] Vicente Anzellini, Bina Desai, Vincent Fung, Justin Ginnetti, Leonardo Milano, Raphaëlla Montandon and Sylvain Ponserre, *Global Disaster Displacement Risk: A Baseline for Future Work*, International Displacement Monitoring Centre (IDMC), 2017, p.7
[41] Tamer Afifi, *Economic or Environmental Migration? The Push Factors in Niger*, International Organization for Migration, 2011, p.99
[42] Michael Werz and Laura Conley, *Climate Change, Migration, and Conflict*, cit., p.3

associated with disasters globally,[43] while the Horn of Africa as well as some countries in the Sahel for a fifth of the region's new displacements.[44]

As also the UNHCR urged, "there is a need to develop a global guiding framework or instrument to apply to situations of external displacement other than those covered by the 1951 Convention".[45] Indeed, "what has been done [both at the academic and at the political level] in the previous decades resulted not enough".[46] Therefore, more research as well as the implementation of more adequate policies are needed to overcome this issue and protect those most vulnerable.[47]

Thesis Structure

This dissertation will be divided into four chapters: 1- The climate change-migration nexus, 2- International Policy Framework on Climate Change and Migration, 3- Focus Africa, and 4- Focus Latin America.

The first chapter, 'The climate change-migration nexus', is needed to introduce the topics of climate change and migrations as well as identifying the issue(s) behind its relationship. Indeed, after carefully highlighting the exacerbation of the world's climate in the last century due to human activities through a series of world-know studies, the chapter deepens the topic of migrations and, more specifically, climate change-related migrations. This is important, first and foremost, to provide some data but also to confute all those statements from international organisations, politicians and the media, who argue that developed countries will be flooded by an enormous amount of climate migrants or refugees. As already mentioned in the introduction, climate change will likely lead to the displacement of people, however, this movement will be either internal or towards neighbouring developing countries. Additionally, this first chapter not only studies the migration of people due to climate change from the Global South, but it also focuses on those marginalised groups who cannot move, in other words the so-called trapped populations.

The second chapter, 'International Policy Framework on Climate Change and Migration', zooms in the political debate behind climate change, migrations and the relationship between

[43]Internal Displacement Monitoring Centre, Global Report on Internal Displacement, Norwegian Refugee Council, 2018, p.38
[44] Internal Displacement Monitoring Centre, Global Report on Internal Displacement, cit., p.17
[45] Guy Goodwin-Gill and Jane McAdam, *Climate Change, Disasters and Displacement*, UNHCR, 2017, p.17
[46] Vicente Anzellini et al., *Global Disaster Displacement Risk*, cit., p.6
[47] Cecilia Tacoli, *Crisis or adaptation?*, cit., p.514

these two, introducing some of the most important laws and regulations in relation to climate change and migrations both at the international and regional level. Most importantly, the chapter serves to deepen the problematic issue of categorizing those people who move due to environmental changes – refugees, migrants, or environmental displaced persons? This part is extremely important given that, at the moment, the topic is covered by a high degree of uncertainty, which for sure negatively impacts a great amount of people.

The third and fourth chapters, "Focus Africa" and "Focus Latin America", are mirroring each other; that is to say that they follow the same structure. Indeed, from an analysis of the problem at the continental level, the two chapters later zoom in and investigate the climate change-migration nexus at the more local level: the Sahel region in Africa and the Wider Caribbean Region (WCR) in Latin America. Furthermore, some projects and plans aiming at mitigating the problems of both climate change and migrations as well as improving the economic and social conditions of the people living in these territories are evaluated.

Methodology

This research used both qualitative and quantitative primary and secondary sources in order reach its ultimate goal and answer its research question "*in which ways is climate change affecting the phenomenon of migrations from the Global South, more precisely from the Sahel region in Africa and the Wider Caribbean Region in Latin America, towards regions that offer more favourable climate conditions as well as a healthier and safer life?"*. Essays, reports, and articles represented an important tool in order to frame and have an overview of these issues, including climate change (e.g. sea-level rise, temperatures increase, change in rainfall patterns, etc.) and migrations (e.g. number of international and internal migrants, migrations patterns, etc.). Additionally, these types of publications served also as an important instrument aimed at deepening other climate change-migration-related topics, including the climate change-conflicts nexus, trapped populations and other marginalised groups (e.g. women or elderly). It must be highlighted that earthquakes and volcanos eruptions are not considered in the analysis, since these phenomena are not caused by the changing climate but they rather are natural events. Furthermore, as regards the policy framework, the analysis of laws, regulations as well as international conventions and treaties, resulted fundamental to the completion of this study and understand the political debate behind this topic(s).

Another important methodological element that was taken into consideration was the analysis of the decision that leads people to migrate. While numerous studies prefer to undertake it at

the macro-level, others prefer instead to focus on the individual/household level. Yet, this dissertation uses a hybrid version of this methodology, thus incorporating in the analysis both the individual/household decision as well as the broader picture of the macro-level.

1. Chapter One: The Climate Change-Migration Nexus

1.1. What is climate change?

According to article 2 of the 1992 UN Framework Convention on Climate Change, one of the first international treaties on the matter, climate change "means a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods".[48] Although the notion of climate change was only conceptualised in the second half of the XX century, scientists, environmentalists and other academics around the world, as already stated in the introduction, had been suspecting that the earth's climate has been changing for at least one century. However, due to the lack of technologies as well as an inadequate system of data collection, climate change could not be proved until recently and, as such, theories remained only theories. Over time, with an improvement of technologies and an increasing number of studies, what seemed to be only possible, futuristic conjectures have become one of the most daunting and challenging problems that our modern society will probably have to face in the XXI century.

Today, it is undisputed that climate change is caused by human activities, more precisely by humankind using oil, gas, coal, and other substances in order to undertake virtually any kind of activity and provide any kind of pleasure in our modern society – for example driving to work, heating our homes or flying to go on holidays. Yet, "when these fossil fuels burn, they release greenhouse gases, mostly carbon dioxide (CO_2), [trapping] the sun's heat and [causing] the planet's temperature to rise".[49] As the IPCC stressed out, human-induced warming has already reached about 1°C of global warming above pre-industrial levels, with a likely range of 0.8°C to 1.2°C; additionally, as figure 1.1. shows, each of the last

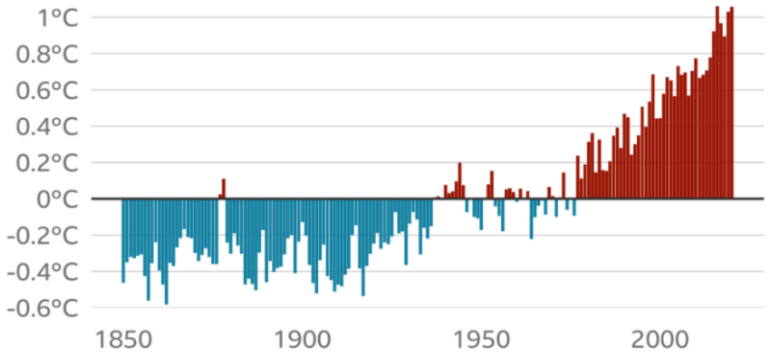

Figure 1.1. Annual mean land and ocean temperature above or belove average, Climate.gov, 2021

[48] United Nations, United Nations Framework Convention on Climate Change – Article 2, 1992. Available at: https://unfccc.int/resource/ccsites/zimbab/conven/text/art01.htm
[49] BBC Science, *What is climate change? A really simple guide*, BBC, 2021, accessed on 12/11/2021. Available at: https://www.bbc.com/news/science-environment-24021772

four decades has been successively warmer than any decade that preceded it.[50] It is undisputed that this phenomenon will have repercussions in the short- and long-term; indeed, according to the majority of scientists worldwide, there is no doubt that impacts of climate change have already arisen in the last few decades, thus affecting "society through impacts on health, food and water security, as well as human security, livelihoods, economies, infrastructure and biodiversity".[51] At the same time, it should be also recalled that even though climate change is undoubtedly a global phenomenon, those who will have to pay the highest price will be the poorest countries of the Global South; that is to say those countries which contribute the least to GHG emissions (see figure 1.2).[52] Particularly, it was identified that four areas would be impacted the most by these changes: the Arctic, the African continent, small islands and atolls and, finally, Asian and African mega deltas.[53]

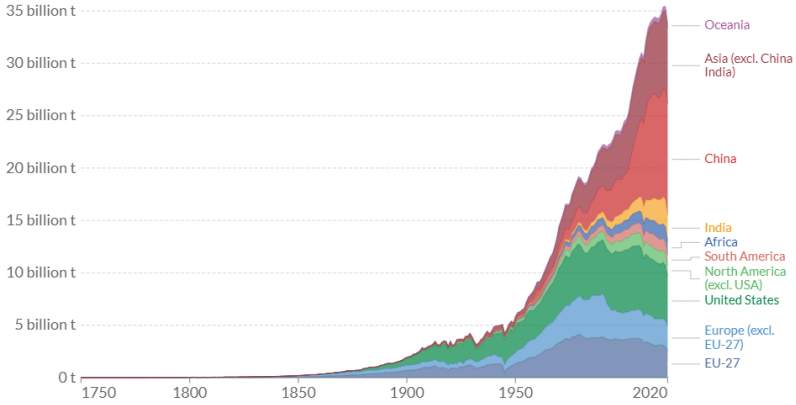

Figure 1.2. Annual CO2 emissions from fossil fuels by world regions, Global Carbon Project, Our World in Data website, 2021

Although states and other stakeholders around the world (e.g. international organisations), at least in words, have started to consider climate change impacts as a real threat for our own survival, economic factors still persist as more important. It is possible to say that further and stronger actions to tackle the problem are for sure needed. Unfortunately, the 2021 IPCC Working group I report has shown that, unless there are immediate, rapid and large-scale responses in the fight against climate change, the infamous 1.5°C (and probably even 2°C) will be beyond reach.[54] Furthermore, it should be highlighted that, as scientists noted in the latest IPCC report, even when responses to climate change will be carried out sooner rather than later, numerous changes in the climate system are irreversible for centuries to millennia.[55] In this context, different scenarios have been reproduced by scientists in relation to temperatures

[50] IPCC, *Special Report: Global Warming of 1.5°C*, IPCC, 2018, p.4
[51] World Meteorological Organization, *State of the Global Climate 2020,* cit., p.34
[52] Michael Werz and Laura Conley, *Climate Change, Migration, and Conflict*, cit., p.21
[53] Silja Kleep, *Climate Change and Migration*, Kiel University, 2017, p.4
[54] Intergovernmental Panel on Climate Change, *Climate change widespread, rapid, and intensifying*, cit.
[55] Intergovernmental Panel on Climate Change, *Summary for Policymakers in Climate Change 2021*, cit., p.28

increase, each of which illustrates what will happen to the planet in different situations – at 1°C, 1.5°C, 2°C and 4°C (see figure 1.3.).

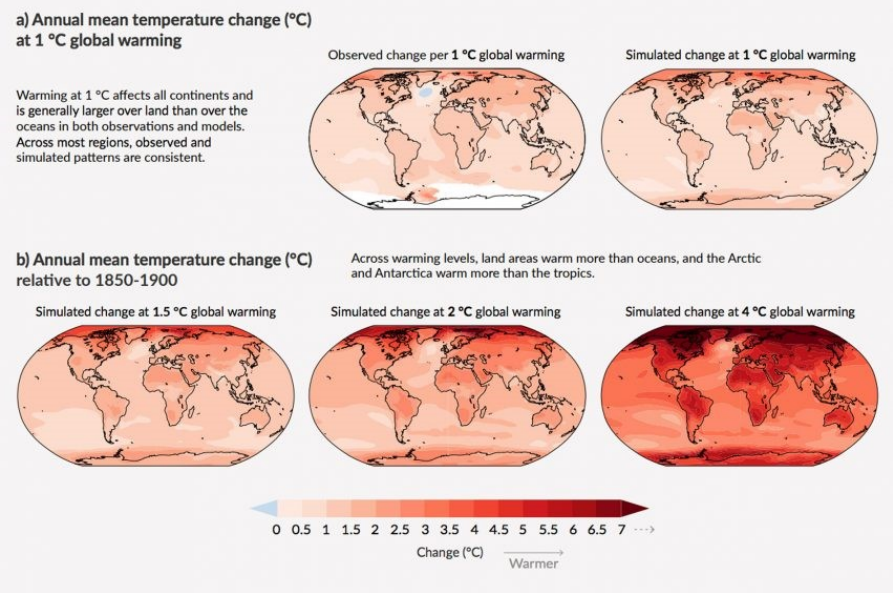

Figure 1.3. Annual mean temperature change, IPCC, Sixth Assessment Report, 2021

But why should mankind limit the increase of temperatures? And, why a warmer climate would be dangerous for our planet as well as our own survival? The answer is actually easy and straightforward. Changes in the climate system are highly connected to global warming, therefore, limiting this phenomenon would also mean limiting the frequency and intensity of weather and climate extremes, which in contrast have been growing fast in the last few decades.[56] As said in the introduction, these weather and climate extremes can be divided into two different categories: slow-onset events and sudden- or rapid-onset disasters. While the former encompasses those phenomena that occur in a relatively long period of time, say desertification, sea-level rise, coastal erosion, glacier retreats, salinisation or land and forest degradation,[57] the latter includes sudden natural hazards such as tropical cyclones, hurricanes, tornadoes, floods, and heatwaves.[58]

Zooming in slow-onset events, these "can erode the capacity of ecosystems to provide critical services, [among others] the availability of fresh water, food, shelter and energy production".[59] As regards desertification, it is defined by article 1 of the United Nations Convention to Combat

[56] Ibid., p.19
[57] UNFCCC, *Slow-Onset Events*, accessed on 13/11/2021. Available at: https://unfccc.int/wim-excom/areas-of-work/slow-onset-events
[58] UN High Commissioner for Refugees, *Key concept on climate change and disaster displacement*, UNHCR, 2017
[59] Bina Desai, Justin Ginnetti and Chloe Sydney, *No Matter of Choice: Displacement in a Changing Climate*, IDMC, 2018, p.2

Desertification in those Countries Experiencing Serious Drought and/or Desertification as "land degradation in arid, semi-arid and dry sub-humid areas resulting from various factors, including climatic variations and human activities [such as overgrazing, overuse of groundwater and deforestation]".[60] In a way, therefore, it is possible to consider desertification as a form of land degradation. Furthermore, in relation to the phenomenon of desertification, extreme temperatures represent another type of slow-onset event which can lead to severe repercussions on the health as well as on the livelihood security of affected populations. Finally, sea-level rise is another slow-onset event that must be further explained in this context, a phenomenon which has been unequivocally increasing and accelerating in the last period. Indeed, as highlighted in the latest IPCC report, using tide gauges and altimetry observations, scientists stressed an increase "from 1.4mm yr-1 over the period 1901-1990 to 2.1mm yr-1 over the period 1970–2015 to 3.2mm yr–1 over the period 1993–2015 to3.6 mm yr–1 over the period 2006–2015".[61] Sea-level rise will affect populations differently in time, however, it will undoubtedly lead to people displacement due to erosion, inundation and rising water tables.

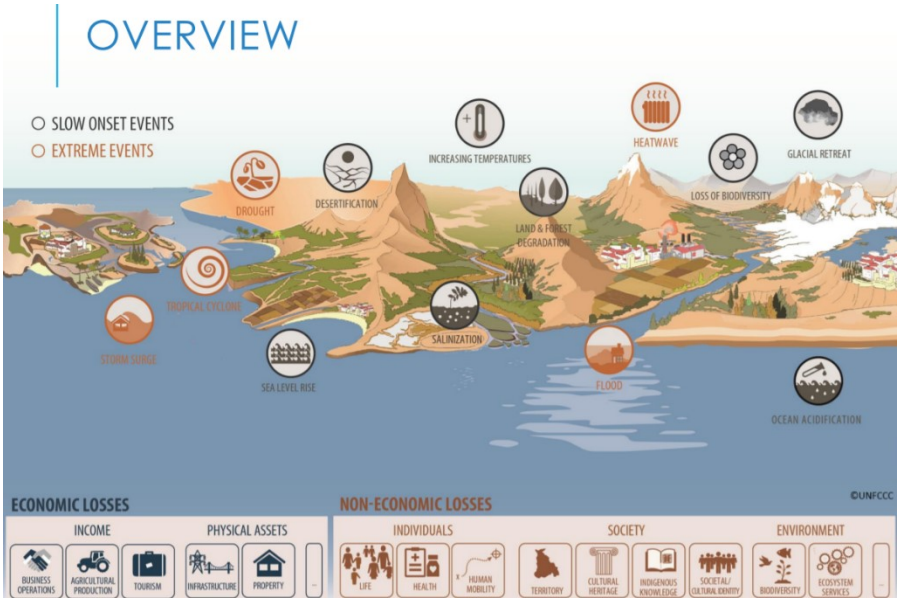

Figure 1.4. Slow-onset events and rapid onset disasters, UNFCCC, 2021

In the context of rapid-onset disasters, instead, as Raleigh et al. emphasise, these phenomena are 'known risks', however, as already mentioned, climate change will alter their intensity as well as their frequency.[62] Scholars highlight that floods and slides, due to increased precipitation, melting snow, deforestation, and urbanisation, will definitely represent an

[60] United Nations, *United Nations Convention to Combat Desertification*, UN, 1994, p.4
[61] Intergovernmental Panel on Climate Change, Special Report on the Ocean and Cryosphere in a Changing Climate, IPCC, 2019, p.323
[62] Clionadh Raleigh et al., *Assessing the Impact of Climate Change on Migration and Conflict*, cit., p.6

important variable in regard to populations' vulnerability and people's mobility.[63] In addition, another example of rapid-onset disaster is the phenomenon of droughts, which is defined by article 1 of the United Nations Convention to Combat Desertification in those Countries Experiencing Serious Drought and/or Desertification as "the naturally occurring phenomenon that exists when precipitation has been significantly below normal recorded levels, causing serious hydrological imbalances that adversely affect land production systems".[64] As above-mentioned, this phenomenon is clearly natural, however, due to climate change, its frequency as well as its intensity will undoubtedly increase in the time to come, thus affecting the already fragile livelihood security of local populations and forcing people to move away from their place of origin – especially in Africa. In this context, it must be highlighted that the exposure and risk of desertification will highly differ on a set of different elements, including land tenure arrangements, coping strategies, opportunities and market infrastructure as well as the availability of government assistance.[65] Finally, especially in Latin America – and more precisely in the Wider Caribbean region -, cyclones, hurricanes as well as tornados and wind storms should be included, since these are phenomena that inevitably lead to destruction, displacements and death. Yet, in all these circumstances, it must be recalled that socioeconomic vulnerabilities as well as the institutional lack of coping capacity, among others, are important factors that can act as threat multiplier in a given territory, thus making local populations and their territories even more vulnerable to climate change.[66]

Impacts of climate change, however, are not only theories. These are visible events and were manifested to everyone in the past years, as the World Meteorological Organization discussed in its publication named *State of the Global Climate 2020*. In this document, the WMO highlights that the impacts of climate change were particularly harsh in specific regions in 2020. As regards the focus of this study, the organisation stressed that extensive flooding occurred over large parts of the African continent, with rainfall well-above average in numerous countries of the Greater Horn of Africa and the Sahel in the rainy season.[67] Severe droughts characterised both Latin America – Argentina, Uruguay, Paraguay and Brazil – and Africa – the Sahel, the Horn of Africa and southern parts of the continent.[68] Finally, it was highlighted that major heatwaves hit several parts of the Latin American continent throughout

[63] Ibid.
[64] United Nations, United Nations Convention to Combat Desertification, UN, 1994, p.4
[65] Clionadh Raleigh et al., *Assessing the Impact of Climate Change on Migration and Conflict*, cit., p.6
[66] Susanne Melde et al, *Making Mobility Work for Adaptation to Environmental Changes*, cit., p.16
[67] World Meteorological Organization, *State of the Global Climate 2020,* cit., p.23
[68] Ibid., p.24

2020, including the April heatwave in the Caribbean and Mexico which reached record temperatures. In Cuba, temperatures reached 39.7 °C at Veguitas (a national record for Cuba) and 38.5 °C at Havana; in eastern Mexico, temperatures exceeded 45 °C at a number of locations, reaching as high as 48.8 °C at Gallinas, while very high readings in Central America included 41.2 °C at San Agustin Acasaguastlán (Guatemala).[69] In addition, it should not be forgotten that, in 2017, only four years ago, as displayed by the Internal Displacement Monitoring Centre, the Atlantic hurricane season was the seventh most active since records began in 1851.[70]

1.2. The Climate Change-Migration Nexus

The phenomenon of migration is too often intended in its broad, general term, without actually deepening its real meaning and without differentiating between, for example, forced or voluntary migration, internal or international migration, and temporary or permanent migration. Yet, this phenomenon is complex and diverse, especially because it is extremely difficult to identify one single factor as the sole cause for people to migrate. Indeed, as scholars argue, people fleeing from their places of origin are usually driven by a set of different reasons, including socio-economic, political and conflict-related, demographic, cultural as well as environmental ones (see figure 1.5.).[71] For some populations, migration is even seen an important rite of passage into adulthood as well as a personal success of the individual.[72] In addition, it must be highlighted that all these elements that influence a person to move can be further divided into two different categories: the so-called macro- and micro-determinants. While the former encompasses factors such as economic growth, employment prospects, poverty, inequality, persecution, and conflict, the latter includes age, education, income, employment status, composition of the household at

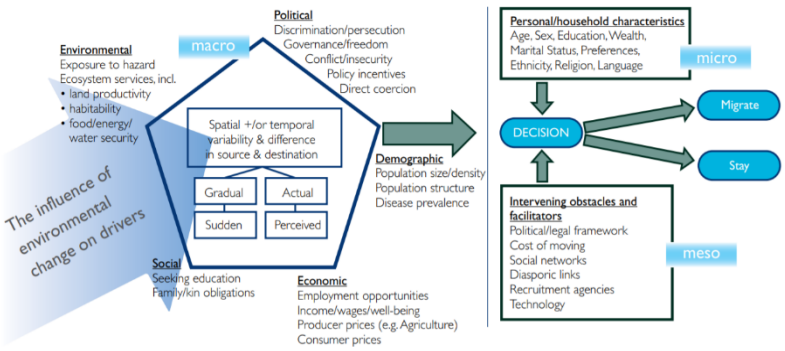

Figure 1.5. Drivers of migration and the influence of environmental change, The Government Office for Science, Foresight Report, 2011

[69] World Meteorological Organization, *State of the Global Climate 2020,* cit., p.25
[70] Internal Displacement Monitoring Centre, Global Report on Internal Displacement, cit., p.42
[71] Frank Laczko and Ann Singleton, *Data on environmental migration: How much do we know?,* Global Migration Data Analysis Centre, Issue No. 2, 2016, p.1
[72] Francois Gemenne and Julia Blocher, *How can migration serve adaptation to climate change? Challenges to fleshing out a policy ideal*, Geographical Journal, 2017, p.6

origin, and sources of income.[73] This also means that some of these factors may 'push' people out of the place of origin and some others may attract (or 'pull') people into a possible place of destination. Furthermore, let's not forget that migrations can also be facilitated or hindered by a set of other external or internal factors, including presence of barriers, availability of financial resources, geographical distance from the place of origin, social networks as well as cultural, religious and linguistic affinity.[74]

Even though environmental factors are difficult to identify and isolate among many others, different scholars around the world have argued that, throughout history, people have always moved temporary or permanently in response to environmental stressors, thus making "migration […] one of the oldest coping strategies for dealing with environmental change".[75] Indeed, the environment, especially in relation to slow-onset events and sudden disasters, has always represented an important element that impacted enormously migration flows; even "Hippocrates and Aristotle believed that characteristics of the natural environment determined the habitability of a region by humans and that the characteristics of people were shaped by attributes of the natural environment in the place in which they lived."[76] Ranging from the birth of millennia-long societies in Mesopotamia and Egypt to the eight century Muslim expansion into the Mediterranean and southern Europe driven by droughts in the Middle East, not to mention the fall of the Roman empire due to massive and violent hordes of peoples (e.g. the Hun and the Visigoths) fleeing from frigid temperatures and growing aridity in their territories, the environment-migration linkage has always been present.[77]

Then, if the environment has always been a driver in migration flows, why has it now become such a hot topic? The question is quite simple to answer. Today, due to the increasingly perceived threat of climate change, particularly the increase in the intensity and frequency of both slow-onset events and rapid-onset natural disasters, together with the thousands of alarmist predictions and publications which argue that developed countries will soon be flooded with environmental refugees (or migrants), the topic has gained great relevance in the public eye. Yet, what people in developed countries do not seem to understand is that migration

[73] Food and Agriculture Organization of the United Nations, *The Linkages between Migration, Agriculture, Food Security and Rural Development*, cit., p.15
[74] Ibid., p.16
[75] Vikram Odedra Kolmannskog, *Future Floods of Refugees: A comment on climate change, conflict and migration*, Norwegian Refugee Council, 2008, p.6
[76] Robert McLeman and Barry Smit, *Migration as an adaptation to climate change*, Climatic Change, Springer, 2006, p.32
[77] Oli Brown, *Climate change and forced migration: Observations, projections and implications*, Human Development Report Office, 2007, p.14

is only one of the many survival strategies and not even the preferred option pursued by individuals due to its possible, negative repercussions on individuals.[78] On the contrary, it is used as last resort when other means of adaptation are insufficient.[79] In addition, even though migration is often seen negatively and as a failure to adapt, several studies have proved the opposite in numerous cases. Indeed, the migration of one or more family members can represent a successful strategy to adapt, since it can serve as a way of diversifying sources of income and reducing risks.[80]

Scholars highlight that migration is a common response especially among vulnerable communities in fragile environments. For this reason, in the context of the climate change-migration nexus, three more concepts must be further deepened: adaptation, resilience and vulnerability. As regards the latter, according to the IPCC, vulnerability means "[t]he propensity or predisposition to be adversely affected; [the term] encompasses a variety of concepts including sensitivity or susceptibility to harm and lack of capacity to cope and adapt".[81] Vulnerability highlights that similar slow-onset events or sudden disasters can affect individuals, or even populations, in different ways. For example, as Ammer et al. state in their publication, "two cities could be exposed to very similar hazards, [say floods], but one city could be more sensitive as its physical sea defences might be weaker"[82] and, as such, this would lead to a much more pronounced displacement flow from that area. Just to make a concrete example, we can say that Dutch people, thanks to the country's developed status and their financial availability, find themselves better prepared in these situations than Puerto Ricans or other populations living in developing countries. Thus, it is possible to claim that environmental factors alone negatively affect individuals or entire populations only "in the absence of sufficient individual and collective measures to anticipate and cope with relevant impacts".[83] Yet, if exposure to a specific event increases, the only way to reduce the

[78] Francois Gemenne and Julia Blocher, *How can migration serve adaptation to climate change*, cit., p.6
[79] Ibid.
[80] Alex Flavell et al*, Migration, environment and climate change*, cit., p.13
[81] J.B. Robin Matthews, *Annex I: Glossary* in Global Warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty, IPCC, 2018, p.560
[82] Margit Ammer, Monika Mayrhofer, Alex Randall and Jo Salsbury, *Time To Act: How the EU can lead on climate change and migration*, Heinrich Boell Stiftung, 2014, p.8
[83] Debora Gonzalez Tejero, Lorenzo Guadagno, Alessandro Nicoletti, *Human mobility and the environment: Challenges for data collection and policymaking* in Migration Policy Practice: A Bimonthly Journal for and by Policymakers Worldwide, Vol 10, No 1, 2020, p.5

displacement risk is to reduce vulnerability;[84] a process that has not yet been fully undertaken by many developing countries and communities living in fragile environments.

The degree of which individuals or populations are vulnerable also reflects their resilience; that is to say, as defined by the IPCC,

"[t]he ability of a system and its component parts to anticipate, absorb, accommodate, or recover from the effects of a hazardous event in a timely and efficient manner, including through ensuring the preservation, restoration, or improvement of its essential basic structures, identity and functions, while also maintaining the capacity for adaptation, learning and transformation".[85]

Therefore, resilience must be taken into consideration when analysing the climate change-migration nexus, since a higher (or lower) degree of resilience in relation to environmental stressors would entail lower (or higher) repercussions on migration flows. Additionally, not only is resilience affected by environmental events, but it is also influenced by a variety of other elements, including social, political, financial and human ones – e.g. war, access to infrastructure, employment opportunities, government capacities -, which however go beyond families or communities' control.[86] As it is by now well established, successful examples of building resilience, especially in poor rural communities, can be livelihood diversification, remittances from migrants in the family or non-farm-related work.[87]

Finally, adaptation is the last related concept. According to the IPCC, adaptation in relation to climate change is "the process of adjustment to actual or expected climate and its effects, which seeks to moderate harm or exploit beneficial opportunities" (explained in figure 1.6.).[88] For individuals, exploiting beneficial opportunities can signify, for example, the development of innovative strategies which enhance the communities' adaptive capacities and livelihoods (e.g. technological and institutional innovations, management of natural resources, etc.).[89] Therefore, in a way, it is possible to claim that the adaptation or non-

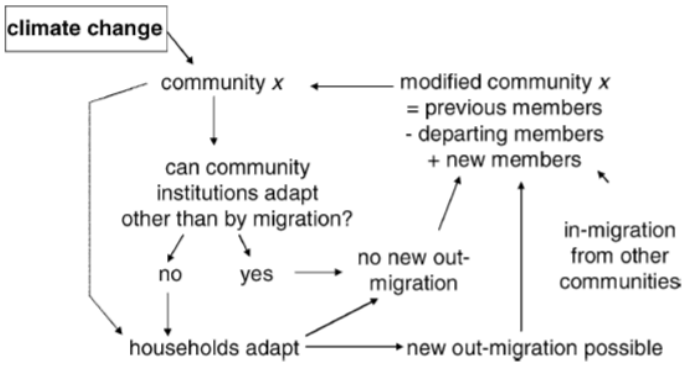

Figure 1.6. Adaptation in relation to climate change, McLeman and Smit, Migration as an adaptation to climate change, 2006

[84] Susanne Melde et al, *Making Mobility Work for Adaptation to Environmental Changes*, 2017, cit., p.18
[85] J. B: Robin Matthews, *Annex I: Glossary*, cit. p.557
[86] Clionadh Raleigh et al., *Assessing the Impact of Climate Change on Migration and Conflict*, cit., p.17
[87] Ibid., p.18
[88] J. B: Robin Matthews, *Annex I*, cit., p.542
[89] Jürgen Scheffran, Elina Marmer and Papa Sow, *Migration as a contribution to resilience and innovation in climate adaptation: Social networks and co-development in Northwest Africa*, Applied Geography, 2011, p.2

adaptation approaches of an individual, a community, or even a country, in the context of climate change will surely influence outbound migration patterns from a specific territory.

1.3. Floods of migrants or a myth? The alarmist and sceptic scenario

As already introduced, starting from the second half of the XX century, some scholars, politicians as well as part of the media have increasingly stressed the dangerous implications that slow-onset events and sudden disasters will have on migration patterns, especially from the poorer countries of the Global South to the richer countries of the Global North. Yet, existing data are often incomplete, thus leading to a high degree of uncertainty and a considerable margin for inaccuracies.[90] This uncertainty is given by a set of different reasons, including nature of climate change, future extent of environmental change, future levels of adaptation and complex nature of individual mobility responses,[91] which led an important group of scientists to question the topic (e.g. How many people will be affected by climate change? How many among these will migrate? Where will they flee to? When will it happen? What will human responses to climate change be? Will there be technologies to mitigate its effects?). In this context, due to the heterogeneity of the issue, two opposite schools of thought have arisen over the decades, which have led to the development of a heated debate: the "alarmists" vs the "sceptics".

The alarmist or maximalist approach represents the first wave of studies focusing on the climate change-migration nexus. At the beginning of the 1980s, several academics and international organisations in the developed world instrumentalised this topic in order to raise awareness and influence politics on future environmental-related challenges.[92] According to maximalist studies, estimates on the number of environmental refugees (or migrants) highly vary, since scholars seem to include every person who decided to move for some reason somehow related to the effects of climate change.[93] Yet, even though the number of people obliged to flee their place of origin due to the effects of climate change depends on the used methodology, alarmist scholars have continued to predict massive migration flows from the Global South, especially because their approach was based on the assumption that all the affected people would migrate in response to climate change.[94] This led, already in 1995, the British environmentalist

[90] Alex Flavell et al*, Migration, environment and climate change*, cit., p.34
[91] Ibid., p.35
[92] Ibid., p.27
[93] Walter Kaelin and Nina Schrepfer, *Protecting People Crossing Borders in the Context of Climate Change*, cit., p.12
[94] Alex Flavell et al*, Migration, environment and climate change*, cit., p.26

specialised in biodiversity Norman Myers to identify more than 25 million environmental refugees at the time and to predict a huge increase - approximately 200 million - by 2050.[95] Following the same logic, Michael Jacobs also explored in his book *Stern Review: The Economics of Climate Change* the climate change-migration nexus, emphasising the possibility to have 200 million permanently-displaced people by the middle of the XXI century.[96] In addition, while the United Nations Environmental Programme (UNEP) forecasted the migration of more than 50 million environmental refugees from the Global South by 2010 - [97] a report that was later erased since predictions failed to materialise-, the British NGO Christian Aid further escalated these predictions, claiming that the number of people forced to leave due to the worsening of climatic conditions could even reach one billion by 2050.[98] More recently, a 2018 World Bank's report (*Groundswell– Preparing for internal climate migration)* highlighted that "climate change could force more than 143 million people [in just three regions of the world - Sub-Saharan Africa, South Asia and Latin America -] to move within their countries [by 2050], unless concerted action is taken at the national and global levels".[99]

Lately, however, a second group of scholars who emphasises a much bigger complexity behind the climate change-migration network has emerged. Following the so-called sceptic approach does not necessarily entail a complete disbelief of a nexus between climate change and migration; on the contrary, these academics tend to be more cautious when making estimates, claiming that migration is not triggered only by climate change but, instead, by multiple causes – including climate change.[100] The sceptic approach has especially gained relevance after the 2011 Foresight Study by the UK Government Office for Science, which has clearly asserted that the phenomenon of migration can be rarely reduced to the effects of one single factor such as climate change or other environmental factors.[101] Furthermore, it should be likewise emphasised that the study has increasingly become important also because it explicitly abstained from making any quantified predictions in relation to the climate change-migration nexus,[102] thus differentiating itself from other researches. In reality, a number of different data

[95] Norman Myers and Jennifer Kent, *Environmental Exodus,* cit., p.1
[96] Michael Jacobs, *Stern Review*, cit., p.6
[97] Diane Bates, Environmental Refugees?, cit., p.465
[98] Rachel Baird et al, *Human tide: the real migration crisis*, Christian Aid, 2007, p.5
[99] Kanta Kumari Rigaud, et al., *Groundswell – Preparing for internal climate migration*, World Bank Group, 2018, p.xix
[100] Walter Kaelin and Nina Schrepfer, P*rotecting People Crossing Borders in the Context of Climate Change*, cit., p.11
[101] Richard Black et al, *Foresight: Migration and Global Environmental Change – Final Project Report*, The Government Office for Science, 2011
[102] Alex Flavell et al*, Migration, environment and climate change*, cit., p.26

are provided in the study; yet, these tend to focus more on the number of people exposed to a risk rather than the number of people who will be forced to migrate.[103] Additionally, this new group of scholars criticised many of the figures of environmental refugees (or migrants) provided by alarmist scientists. Indeed, it was argued that these projections were following a 'business as usual' approach, "in which natural hazards occur with the same frequency and intensity as in the past and [that] population growth and changes in exposure and vulnerability occur at current rates".[104] Finally, one last critique moved by sceptic scholars against alarmist scenarios is that they have been instrumentalised by the academia, politicians and international organisations for different reasons, among others, raise awareness on the issue, advocate for anti-immigration policies, raise funds, and increase visibility. To conclude, as De Haas argues, "the specter of mass migration [in relation to climate change] is a dangerous practice based on myth rather than fact, [which] puts the credibility of those using this argument […] seriously at risk".[105]

1.4. Refugees, migrants or something else?

There is an ongoing heated debate among scholars, politicians and international organisations as regards the labelling of people who flee the place of origin in the context of environmental changes. Although most of the academic community finds evident the relation between climate change and migrations, a common definition has not been found yet. Stakeholders, depending on their interests, have therefore adopted over time different solutions, including 'environmental refugees', 'environmental migrants', 'environmentally-displaced persons' (also internal-displaced persons), 'environmental displacees', 'eco-migrants' and 'climate evacuees'. Yet, the issue is not only semantic; on the contrary, it seems to arise a number of different problems, including the apparent possibility for people to decide which label better fits in the context and to whom it should be applied.[106]

Among the myriads of publications of the last 50 years, however, only three labels stand out and are worth mentioning: climate refugees, climate migrants and environmentally-displaced persons. In this context, environmental refugee was the term which was firstly developed and used in the academic world. Indeed, even though it was coined by the illustrious environmentalist Lester Brown in the 1970s, the denomination of these people was popularised

[103] Sara Virgil, Addressing the land degradation-migration nexus: the role of the United Nations Convention to Combat desertification, International Organization for Migration, 2019, p.13
[104] Alex Flavell et al*, Migration, environment and climate change*, cit., p.39
[105] De Haas, *Climate refugees*, cit.
[106] Margit Ammer et al., *Time to Act*, cit., p.18

by the famous UNEP researcher Essam El-Hinnawi in one of his prominent reports already in 1985.[107] In this report, El-Hinnawi defined environmental refugees as "those people who have been forced to leave their traditional habitat, temporarily or permanently, because of a marked environmental disruption (natural and/or triggered by people) that jeopardized their existence and/or seriously affected the quality of their life".[108] In addition, depending on the situation, the Egyptian researcher further distinguished among three types of environmental refugees: temporary displacement due to temporary environmental stress, permanent displacement due to permanent environmental change, and temporary or permanent displacement due to progressive degradation of the resource base.[109] In reality, when developing this list, El-Hinnawi also integrated a fourth, small category of environmental refugees; that is to say those people who were displaced by the destruction of their environment as an act of warfare[110] - a category which is too often forgotten. Similarly, following the same logic, the American environmentalist Norman Myers, one of the most influential scholars in his field, together with Jennifer Kent, further expanded this definition in 1995. Hereby, the two scholars defined environmental refugees as "persons who can no longer gain a secure livelihood in their traditional homelands because of environmental factors of unusual scope, [among others] drought, desertification, deforestation, soil erosion, water shortages and climate change, also natural disasters such as cyclones, storm surges and floods".[111]

As Kolmannskog suggests, the term was developed in this period to serve the humanitarian agenda – probably also connected to what happened in Sudan in 1984 due to an extremely harsh drought.[112] If [environmental] refugees were seen, at the beginning, as innocent victims, the perception of the 'modern world' mutated over time. The topic soon entered into a heated debate among different factions, where it was instrumentalised by developed countries for purposes other than humanitarian aid (e.g. anti-immigration policies and border barriers). In addition, even though 'environmental refugee' represents the most used term among stakeholders in this field, antagonists of the term – but not only – identified different argumentations on why it should not be used. Firstly, legally speaking, in order to be recognised

[107] Frank Biermann and Ingrid Boas, *Preparing for a Warmer World: Towards a Global Governance System to Protect Climate Refugees*, Global Environment Politics, 2010, p.62
[108] Essam El-Hinnawi, *Environmental Refugees*, UNEP, 1985, p.4
[109] Richard Black, *Environmental refugees: myth or reality*, New issues in refugee research, Working Paper No.34, University of Sussex, 2001, p.2
[110] Diane Bates, *Environmental Refugees?, cit.*, p.469
[111] Norman Myers and Jennifer Kent, *Environmental Exodus: An Emergent Crisis in the Global Arena*, Climate Institute, 1995, p.18
[112] Vikram Odedra Kolmannskog, Future Floods of Refugees, cit., p.8

as refugees, people need to meet specific criteria as determined in the 1951 United Nations Convention on Refugees; yet, as many scholars highlight, environmental refugees generally do not meet any of these criteria.[113] According to the 1951 Convention, in fact, a refugee is someone with a

"well-founded fear of being persecuted for reasons of race, religion, nationality, membership of a particular social group or political opinion, [who] *is outside the country of his nationality and is unable or, owing to such fear, is unwilling to avail himself of the protection of that country; or who, not having a nationality and being outside the country of his former habitual residence as a result of such events, is unable or, owing to such fear, is unwilling to return to it".*[114]

Furthermore, following this definition, in order for people to be recognised the status of refugees, a forced decision is needed; that is to say that people do not have any other choice but flee their territory of origin. Yet, people escaping the consequences of changing climatic conditions are rarely forced to flee, on the contrary, most of the times, these people are acting before it is too late, thus somehow taking a voluntary decision. In addition, the status of refugee can only be accepted when people cross national borders,[115] something that is generally missing in this context. Finally, the term environmental refugee implies also a mono-casualty, which instead can be rarely found in human reality;[116] that is to say that the environment is only one of the many factors that influences human mobility but not the only one – others can be economic and socio-cultural.

For all these reasons, as previously highlighted, some of the stakeholders involved in this debate have preferred over the years to adopt other terms. Particularly international organisations, such as the IOM and the UNHCR, have deliberately rejected the possibility to recognise the status of refugee to people fleeing in the context of climate change, claiming that it "could undermine the international legal regime for the protection of refugees".[117] In view of these elements, the International Organisation for Migration provided a new definition for these people: environmental migrants. According to these organisations environmental migrants are

"persons or groups of persons who, for compelling reasons of sudden or progressive changes in the environment that adversely affect their lives or living conditions, are obliged to leave their habitual homes, or choose to do so, either temporarily or permanently, and who move either within their country or abroad".[118]

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[113] Jane McAdam, *From the Nansen Initiative to the Platform on Disaster Displacement: Shaping International Approaches to Climate Change*, Disasters and Displacement, UNSW Law Journal, Vol. 39, No. 4, 2016, p.1535

[114] UNHCR Communications and Public Information Service, *Convention and Protocol relating the Status of Refugees*, UNHCR, 2010, p.14. Available at: https://www.unhcr.org/3b66c2aa10.html

[115] Nick Gill, '*Environmental Refugees': Key Debates and the Contributions of Geographers*, Geography Compass, Blackwell Publishing Ltd, 2010, p.862

[116] Vikram Odedra Kolmannskog, Future Floods of Refugees, cit., p.12

[117] Alex Flavell et al., *IOM Outlook on Migration, Environment and Climate Change*, International Organisation for Migration, 2015, p.22

[118] International Organisation for Migration, *Ninety-fourth Session – Discussion Note: Migration and the Environment,* IOM, 2007. Available at:

As previously mentioned, refugees can be recognised as such only when they meet specific criteria, among others, being forced to move elsewhere in a given situation. Yet, very often, persons affected by climate change decide to relocate in another place voluntarily also due to non-environmental related factors. This brings us to further divide environmental migrants into three smaller categories: environmental emergency migrants, those fleeing permanently or temporary due to sudden-onset hazards (e.g. floods and hurricanes); environmental forced migrants, those leaving their territory of origin due to environmental deterioration (e.g. water and land degradation); and environmentally motivated migrants, those leaving in advance in order to avoid the severe consequences of climate change (e.g. sea-level rise and desertification).[119] However, as different scholars highlight, the use of the term environmental migrants can also lead to severe repercussions and unfortunate side-effects. Indeed, as long as uncertainty and a lack of consensus among stakeholders persist, the above-mentioned definition may be used in developed countries in favour of theses restricting immigration policies,[120] undoubtedly affecting the lives of millions of people.

The last of the three terms previously highlighted is environmentally-displaced persons. This category of people can also be identified in the so-called internally-displaced persons (IDPs), especially because the majority of people fleeing their territory of origin in the context of climate change is likely to remain inside the country of nationality. Although not binding, the 1998 Guiding Principles on Internal Displacement define IDPs as

"*persons or groups of persons who have been forced or obliged to flee or to leave their homes or places of habitual residence, in particular as a result of or in order to avoid the effects of armed conflict, situations of generalized violence, violations of human rights or natural or human-made disasters, and who have not crossed an internationally recognized State border*".[121]

When analysing this definition, two core concepts are in the foreground and catch our attention: the forced nature of the movement and the internal dimension of the flight.[122] In addition, in the context of environmental events, IDPs can be affected by situations in which the territory of origin slowly deteriorates (the so-called slow-onset events such as desertification and sea-level rise) as well as situations of sudden danger in which people are forced to rapidly flee in

https://www.iom.int/sites/g/files/tmzbdl486/files/jahia/webdav/shared/shared/mainsite/about_iom/en/council/94/MC_INF_288.pdf

[119] Maurizio Gubbiotti et al., *Profughi Ambientali*, cit., p.14

[120] Vikram Odedra Kolmannskog, Future Floods of Refugees, cit., p.9

[121] United Nations Office for the Coordination of Humanitarian Affairs, *Guiding Principles on Internal Displacement,* United Nations, 1998, p.1

[122] Vicente Anzellini, Bina Desai, Vincent Fung, Justin Ginnetti, Leonardo Milano, Raphaëlla Montandon and Sylvain Ponserre, *Global Disaster Displacement Risk: A Baseline for Future Work*, International Displacement Monitoring Centre (IDMC), 2017, p.7

order to save their lives and their families' (the so-called sudden-onset hazards such as floods and hurricanes). Moreover, when talking about IDPs, it must be emphasised that, even though they outnumber both refugees and migrants (see figure 1.7.), these people receive far way less attention in the international public and political arena, keeping also in mind that the term internally displaced people does not even have exactly legal implications.[123] Finally, it is possible to claim that IDPs in the context of climate change do not actually represent an issue if states are able or are willing to provide protection and assitence to these people; yet, problems arise when local governments are unwilling or unable to aid and protect this category of people.[124]

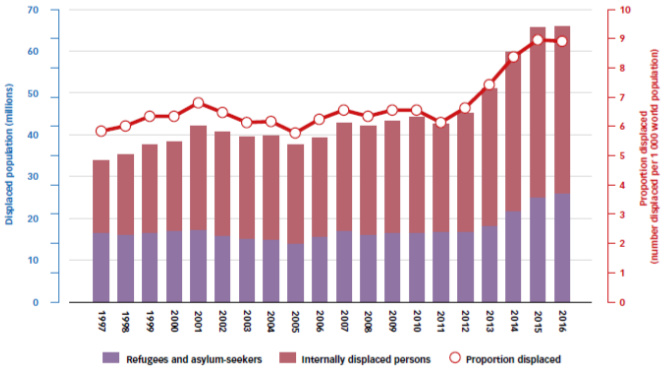

Figure 1.7. Trend of global displacement and proportion displaced (1997-2016), UNHCR, Global Trends – Forced displacement in 2016, 2016

Due to all these factors, finding a precise and agreed definition for people escaping the effects of climate change, both internally and internationally, has turned out to be extremely difficult. More definitions could be added in this chapter (for example, eco-economic migrants, climate disasters refugees, climate-affected migrants), however, this will surely increase the degree of uncertainity, which already characterises this field. Further research as well as a stronger commitment on the topic by researchers, international organisations and politicians in order to find a solution and a common definition are surely needed. Not only will a common definition reduce the level of uncertainity among stakeholders but, most importantly, it will positivily impact the lives of millions of people that depends on it.

1.5. The dimensions of migration: forced vs voluntary, permanent vs temporary and international vs internal

Migration has for sure a broad, general meaning; yet, too often, people forget to include in the analysis a deeper understanding of this phenomenon, which instead entails several characteristics. As we can see throughout this chapter, although analysed singularly, all these dimensions of migration are in reality extremely connected one with the other. Among these dimensions, the most important that must be emphasised are the level of voluntariness, the

[123] Vikram Odedra Kolmannskog, Future Floods of Refugees, cit., p.29
[124] Ibid., p.30

period of time which the phenomenon lasts, and the distance from the place of origin (especially whether or not national borders are crossed).

As regards the first dimension (i.e. the level of voluntariness), it is possible to distinguish between forced and voluntary migration. Scholars claim that it is often difficult to distinguish between these two types and that it is virtually impossible to draw a straight line between the two; on the contrary, they suggest that this distinction is blurred in many cases. The World Food Programme (WFP) and the Food and Agriculture Organization (FAO) of the United Nations define "voluntary migration [as] a proactive and typically planned movement with the purpose of improving livelihoods, [while] forced migration indicates a reactive move of last resort to survive an event or situation that severely challenges safety, security or livelihoods in the place of origin".[125] In this context, the decision of the household to send a person to find a job elsewhere and for a limited period of time while recovery is still taking place in situ may seem a voluntary decision; yet, the circumstances and the situation that the specific household is experiencing highlight how this may be the only option at their disposal to survive.[126] In addition, when talking about the distinction between forced and voluntary migration, it should also be introduced the concept of planned relocation, which according to the Nansen Initiative Protection Agenda is

"a *planned process in which persons or groups of persons move or are assisted to move away from their homes or places of temporary residence, are settled in a new location, and provided with the conditions for rebuilding their lives. Planned relocation can be voluntary or involuntary, and usually takes place within the country, but may, in very exceptional cases, also occur across State borders"*.[127]

In the context of environmental changes, the concept of planned relocation results extremely important when analysing impacts on populations living on low-lying islands as well as territories located nearby mega deltas. These populations will have in the future no other choice but to flee due to the severe consequences of sea-level rise, floods and salinisation. Yet, in this case, the question is when (or even whether) the movement of these people is to be considered forced or voluntary. Indeed, as previously mentioned, it is not always easy to draw a straight line between forced and voluntary migration and, as such, too often, the distinction between the two is extremely blurred.

[125] Food and Agriculture Organization of the United Nations, *The Linkages between Migration, Agriculture, Food Security and Rural Development*, cit., p.6
[126] Susanne Melde et al, *Making Mobility Work for Adaptation to Environmental Changes*, cit., p.44
[127] The Nansen Initiative, *Agenda for the Protection of Cross-border Displaced Persons in the Context of Disasters and Climate Change*, Vol. 1, 2015, p.17

Furthermore, in this analysis, the second dimension of migration is related to the period of time spent outside the place of origin by people escaping the consequences of climate change. It is possible to distinguish between temporary and permanent migration. Yet, although international attention, especially in developed countries, is focused on the number of refugees who will settle permanently in these territories, as literature has proven, migration as a response to environmental changes will mainly be temporary.[128] Permanent out-migration, in fact, seems to occur particularly in relation to acute or irreversible environmental degradation as well as when livelihoods become unsustainable - for example, in territories that will face major sea-level rise events or high levels of desertification. [129] In contrast, as data highlights, sudden-onset events (e.g. floods, hurricanes, cyclones, etc.) are likely to provoke only temporary outbound migration, with people affected by such events seeking to return once the threat is over.[130] Even though this is rarely the case, when consequences are too severe and damages too big, members of a household (or even entire households) may decide to move permanently towards a new location. Indeed, since people affected by these events represent the most vulnerable and poorer shares of the population, they lack resources to relocate and, as such, they tend to return in the disaster zone as soon as possible to build again.[131] Additionally, when deepening the phenomenon of migration, particularly temporary migration, one cannot avoid mentioning the phenomenon of seasonal migration, also known as circular migration; that is to say people, especially in rural agricultural areas, who migrate in periods in which harvesting does not require a lot of labour. This type of migration has become lately extremely common regardless climate change, since it is viewed as an integral part of livelihood or food security strategies.[132] At the same time, it must be mentioned that the exacerbation of climate change will force agricultural populations in the future to increasingly resort to seasonal migration in periods of difficulties.[133]

Finally, the last piece of the puzzle regards the distance covered by people from the place of origin to a potential new location, especially distinguishing between international and internal migrations. Distance and duration are not necessarily correlated between each other; indeed, as Tejero et al. argue, people may relocate only a few kilometres due to coastal erosion while

[128] Clionadh Raleigh et al., *Assessing the Impact of Climate Change on Migration and Conflict*, cit., p.22
[129] Susanne Melde et al, *Making Mobility Work for Adaptation to Environmental Changes*, cit., p.43
[130] Ibid., p.44
[131] Vikram Odedra Kolmannskog, Future Floods of Refugees, cit., p.15
[132] Susanne Melde et al, *Making Mobility Work for Adaptation to Environmental Changes*, cit., p.42
[133] Margit Ammer et al., *Time to Act*, cit., p.21

moving temporarily hundreds of kilometres to avoid the impacts of a cyclone.[134] Moreover, internal migration is somehow connected to what has been said in the previous paragraph, that is to say that it can also be used by migrants to undertake their development process. People can migrate internally from rural to urban areas in order to move from one sector of the economy (say agriculture) to another (say manufacturing), thus diversifying households' sources of income.[135]

Yet, even though it is well established that most of the environment-related migration occurs within national borders (see figure 1.8.), international attention, especially in developed countries, still focuses on policies aimed at reducing and controlling external migration flows.[136] In addition, what must be emphasised is that when international migration takes place, people tend to move towards neighbouring countries rather than overseas or, as sometimes may happen, migrants can cross national borders accidentally. This happens particularly in those countries where borders are porous and not clearly marked (e.g. Greater Horn of Africa).[137] Therefore, as suggested above, even though several politicians, international organisations and media channels tell us a different story, people do not tend to migrate internationally. But why do people move internally? First of all, cross-border migration is extremely expensive, not only monetary speaking (i.e. the effective cost of travelling and settling down in a new country) but also non-monetary (i.e. learning a new language, impacting with religion and cultural differences, creating new social ties, etc.).[138] Lack of information, risk and uncertainty as well as the decision to leave everything and everyone behind can also entails severe consequences, thus leading to a major social and psychological draining.[139] Further, let's not forget that

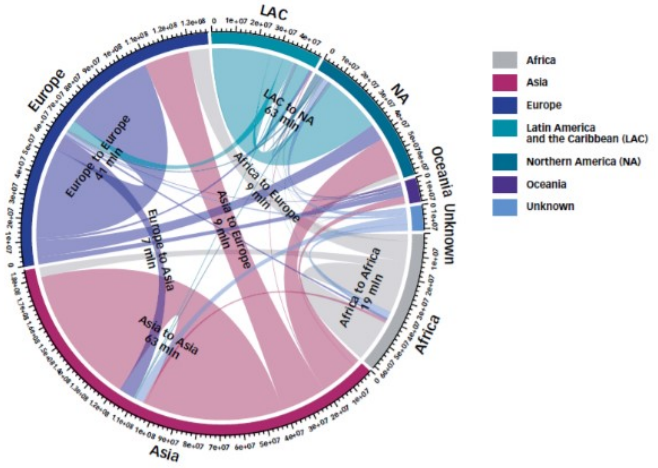

Figure 1.8. International and internal migrants by major areas of origin, UNDESA

[134] Debora Gonzalez Tejero et al., *Human mobility and the environment*, cit., p.7
[135] Food and Agriculture Organization of the United Nations, *The Linkages between Migration, Agriculture, Food Security and Rural Development*, cit., p.4
[136] Susanne Melde et al, *Making Mobility Work for Adaptation to Environmental Changes*, cit., p.8
[137] Vicente Anzellini et al., *Global Disaster Displacement Risk*, cit., p.7
[138] Food and Agriculture Organization of the United Nations, *The Linkages between Migration, Agriculture, Food Security and Rural Development*, cit., p.19
[139] Ibid.

numerous restrictions at the border are applied, especially in developed countries – the EU, the USA or Australia and New Zealand -, thus somehow limiting the decision of these people to migrate internationally towards Western developed countries.[140]

1.6. The effects of climate change on migration among marginalised populations: trapped populations and women

Climate change is surely a global phenomenon which affects humanity as a whole in the time to come; yet it is well-acknowledged in the academia that not everybody is (and will be) affected by environmental stressors the same way. In 2001, for example, the IPCC stressed that impacts of climate change "will be differently distributed among different regions, generations, age, classes, income groups, occupations and genders".[141] In this context, other climate change researchers and policymakers emphasise that the most socially and economically marginalised populations – the so-called 'poor' – will represent the most vulnerable shares of people in the face of climate change. The academia refers to 'the poor' as a homogeneous group, however, when looking at these data more in detail, it turns out that, sadly, 70% of them are women.[142] Furthermore, when considering only rural women in developing countries, these numbers are even more tragic.

Studies have shown that environmental change and its consequences are negatively impacting females much more than males due to a number of different reasons, mainly connected to women's economic and social rights. These include cultural restrictions (for example, women are way less educated than men, which leads to low literacy levels, lack of information as well as lack of specific abilities – e.g. swimming or tree climbing) and culturally assigned role as caregivers (i.e. it is more likely for women to assist elderly and children than men).[143] In addition, while women in developed countries are more likely to be evacuated than men because of socially constructed gender differences - say family obligations -, it does not necessarily occur in developing countries.[144] This has also been confirmed by a research involving disasters in over 141 countries, in which it has been discovered that "women and

[140] Alex Flavell et al., *IOM Outlook on Migration, Environment and Climate Change*, cit., p.41
[141] Lorena Aguilar, Ariana Araujo and Andrea Quesada-Aguilar, *Fact sheet on Gender and Climate Change*, IUCN, 2007, p.3
[142] Sherilyn MacGregor, *A stranger silence still: the need for feminist social research on climate change*, The Editorial Board of the Sociological Review, 2010, p.130
[143] Alex Flavell et al*, Migration, environment and climate change*, cit., p.47
[144] Namrata Chindarkar, *Gender and climate change-induced migration: proposing a framework for analysis*, Environmental Research Letters, No. 7, 2012, p.2

children are 14 times more likely to die than men during a disaster".[145] Evidence is also given by another study regarding the 1991 Bangladesh cyclone disaster, where 90% of the 140.000 victims were women.[146]

In the adaptation context – that is to say, for instance, in the aftermath of a disaster as well as in the face of consequences deriving slow-onset events - research has proved that gender inequalities follow the same patterns. In developing countries, for example, women and girls are more exposed to the risk of domestic and sexual violence, especially in shelters or emergency camps where these people do not have any sort of privacy.[147] In addition, in some communities, cultural norms can restrict the freedom and/or the movement of women, which clearly affect them in a situation of emergency (e.g. seek help).[148] Moreover, due to their marginalised role, females have fewer possibilities and resources than their male counterparts, thus making extremely difficult to act and to adapt in the context of climate change. Just to give an example, for rural populations, land is considered the most important element one person could have since it provides the livelihood needed; yet, as we know, numerous statutory or customary laws can restrict women's rights, making extremely difficult for them to undertake this path.[149]

Through different studies, scholars have also proved the existence of an important connection between gender and the phenomenon of migration, in which women are clearly disproportionately affected than men. Firstly, it has been highlighted that migration patterns tend to vary at every stage of the migration cycle depending on the migrant's sex (predeparture, transit, arrival, stay and return).[150] Additionally, the pressure to migrate, risk perception, priorities, strategies, destination choices, and employment perspectives, among others, have been argued to be also gendered.[151] Yet, it should not be forgotten that one of the main reasons for which women migrate in developing countries are related to family matters, more precisely marriage. A study from Burkina Faso shows that the migration rate for women is extremely higher than men before the age of 18, since this represents the average age in which women

[145] Lorena Aguilar et., *Fact sheet on Gender and Climate Change*, cit., p.2
[146] Ibid.
[147] Justina Demetriades and Emily Esplen, *The Gender Dimensions of Poverty and Climate Change Adaptation*, IDS Bulletin, Vol. 39, No. 4, Institute of Development Studies, 2008, p.28
[148] Alex Flavell et al., *IOM Outlook on Migration, Environment and Climate Change*, cit., p.105
[149] Justina Demetriades and Emily Esplen, *The Gender Dimensions of Poverty and Climate Change Adaptation*, cit., p.26
[150] Alex Flavell et al., *IOM Outlook on Migration, Environment and Climate Change*, cit., p.103
[151] Ibid.

get married in the country.[152] On the contrary, evidence found that beyond this age, women are more likely to remain in their villages compared to men.[153] At the same time, however, it has also been argued that migration negatively affects women even when they are not the ones who leave. Indeed, the flight of a male family member can lead to a number of severe consequences for women who stay behind – for example, it could increase the workload of women family members, many of whom must also take care of their families (e.g. housework, preparing food, etc.).[154]

Not everybody can or is willing to migrate; as such, studies emphasise that climate change can also result in a drastic increase of the levels of immobility among people.[155] Defined by the literature as 'trapped populations', these are "populations who do not migrate, yet situated in areas under threat, […] at risk of becoming 'trapped', where they will be more vulnerable to environmental shocks and impoverishment".[156] For sure, trapped populations mostly represent people who are willing to move but lack of human and financial assets to do so (e.g. social networks, financial resources, etc.) – in other words, these are the poorest shares of the population. In this category, it is possible also to include affluent households, who may voluntarily decide not to migrate and stay behind in order to avoid losing the benefits they have in the local community (e.g. social status, unwilling to abandon their properties, prospect of inheriting land).[157] Therefore, having financial and human assets represents for sure an important element when it comes to decide to migrate or to send a family member away, however, at the same time, having the same resources can lead to an immobility trap since people

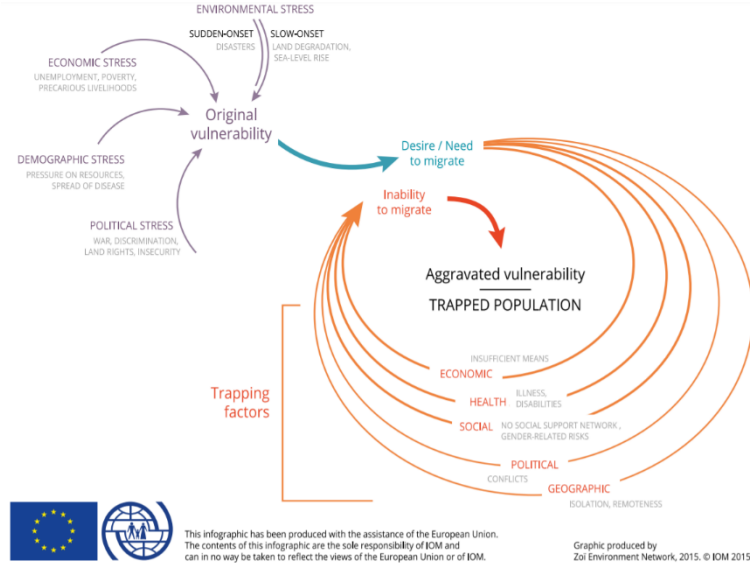

Figure 1.8. Trapped Populations, Zoi Environment Network, 2015 in MECLEP Global Research 2019

[152] Food and Agriculture Organization of the United Nations, *The Linkages between Migration, Agriculture, Food Security and Rural Development*, cit., p.25
[153] Ibid.
[154] Namrata Chindarkar, *Gender and climate change-induced migration*, cit., p.5
[155] Albert Kraler et al., *Climate Change and* Migration, cit., p.30
[156] Susanne Melde et al, *Making Mobility Work for Adaptation to Environmental Changes*, cit., p.14
[157] Ibid., p.54

seem to be not ready to abandon the special status they have in their community of origin. This shows us, again, that the phenomenon of migration cannot merely be merely reduced to the push-pull logic, on the contrary, there are many elements that may influence someone's decision to migrate or to remain in the territory of origin (see figure 1.8.).

2. Chapter Two: International Policy Framework on Climate Change and Migration

Climate change is an extremely dangerous and daunting phenomenon, which will surely affect our modern society in different ways throughout the XXI century. It becomes therefore essential for individual states, international organisations and other stakeholders to discuss the developments of the subject in regional or international fora and to meticulously plan a global approach to tackle the problem(s). In this context, as Kaelin and Schrepfer highlight, according to present international law, states have three set of obligations to pursue: mitigation (i.e. trying to reduce climate change, for example, by reducing GHG emissions), adaptation (i.e. finding the best practices for mankind to adapt to the negative consequences of environmental changes) and protection (i.e. addressing the humanitarian needs to whoever may be affected by climate change).[158] Furthermore, even though strengthening coordination and improving governance at the international level result vital to tackle climate change and to mitigate its negative consequences, regional and local policy frameworks should not be disregarded. These may include the implementation of measures aimed at improving the socio-economic conditions of people,[159] actions improving institutions and governance processes (e.g. eradicating corruption)[160] as well as measures preventing long-term impacts in different sectors (e.g. water, health, agriculture).[161]

At the same time, as it can be noted at the negotiations of the last Conference of Parties (COP26) held in Glasgow in November 2021, international law specifically dealing with climate change has proved to be still too weak. States, especially developed countries of the Global North, should and must further commit in the fight against climate change by being leaders in promoting and adopting stronger and more effective regulations both at the regional and international levels. Indeed, when analysing what has been undertaken by the international community in the last few decades, it is possible to notice that states have been merely focusing on setting emissions targets, which have not even been entirely respected. Yet, we should not be naïve and forget that the primary objectives pursued by the international community are the

[158] Walter Kaelin and Nina Schrepfer, *Protecting People Crossing Borders in the Context of Climate Change: Normative Gaps and Approaches*, UNHCR, 2012, p.17
[159] Julia Kloos, Niklas Gebert, Therese Rosenfeld and Fabrice Renaud, *Climate change, Hydro Conflicts and Human Security: Regional Assessment and Policy guidelines for the Mediterranean*, Middle East and Sahel, United Nations University, No 13, 2013, p.58
[160] Julia Kloos et al., *Climate change, Hydro Conflicts and Human Security*, cit., p.59
[161] Ibid., p.61

results of trade and economic relations, which have been for sure limiting the protection of other important rights, including the ones related to the environment.[162]

Moreover, as mentioned earlier, climate change will surely affect people displacement and migration patterns. The correct implementation of specific types of policies, especially relating to the three above-mentioned obligations (i.e. mitigation, adaptation and protection), will for sure lead to positive impacts on the movement of people from poorer countries. However, despite some exceptions, the international community has directed its energies on strict immigration policies which erect barriers rather than finding solutions for people escaping their territory of origin due to climate change. Additionally, despite what the academia has been suggesting for years, too often, the international community has lacked to recognise migration in the international policy framework as a positive adaptation strategy, which could change the perception of environmental migrants/refugees and lead to the implementation of appropriate policies.[163]

The following chapter analyses the policy framework which has been adopted over the decades by the international community, deepening some of the most important pieces of legislation (both binding and not binding) in relation to climate change and migration. In order to facilitate the understanding of this complex topic, the chapter is divided into two different subparts. While the former encompasses the most important tools used by the international community to tackle climate change (e.g. the 1992 UN Framework Convention on Climate Change, the Kyoto Protocol and the Paris Agreement), the latter includes those tools adopted at the international and regional levels in the context of both migration and climate-change migration nexus (e.g. the 1951 UN Convention on Refugees, the OAU Refugee Convention, the Kampala Convention, the Nansen Initiative). Additionally, to further facilitate the comprehension of this topic, all these legal tools are ordered chronologically, thus ranked from the oldest to the most recent one.

2.1. Policy Framework on Climate Change

2.1.1. The 1992 UN Framework Convention on Climate Change

The UN Framework Convention on Climate Change (UNFCCC) represents one of the most important agreements which has ever been signed at the international level in the context of

[162] Deepa Badrinarayana, *Global Warming: A Second Coming for International Law*, Washington Law Review, Vol. 85, No. 2, 2010, p.262
[163] Oli Brown, *Climate change and forced migration*, cit., p.30

climate change. Signed in 1992 at the United Nations Conference on Environment and Development, informally known as the 'Rio Earth Summit', and ratified by virtually all states of the world (197 countries), the UNFCCC has paved the way for the birth of the Kyoto Protocol and the Paris Agreement.[164] Furthermore, as research and knowledge on the topic expanded over time, a series of protocols and amendments imposing more specific and stringent obligations for the parties have been included in the agreement.[165] In any case, as article 2 of the UNFCCC states, the ultimate goal

"is to achieve, in accordance with the relevant provisions of the Convention, stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. Such a level should be achieved within a time frame sufficient to allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened and to enable economic development to proceed in a sustainable manner".[166]

For sure, the ultimate objective of this Convention may appear extremely elementary in the face of more recent environmental documents; yet, the achievement of such an agreement between the parties should be seen as a success, especially considering it was signed in 1992. As scholars argue, the UNFCCC was primarily designed by the international community as the first step of a long process aimed at fighting environmental change and its related negative consequences.[167] Additionally, it must be emphasised that in the agreement, for the first time, developed countries recognised the major impact they have in respect to global emissions of greenhouse gases, highlighting instead that these are still relatively low in developing nations. For this reason, as stated in article 4, developed countries are required to publish more detailed reports and adopt stricter national (or regional) policies on the matter.[168] Finally, it is worth noting that the UNFCCC, as described in article 11, developed a financial mechanism, funded by industrialised nations, with the aim of providing capital and technologies in order to support different actions and actors in the fight against climate change in the developing world (e.g. a system of grants and loans).[169]

As mentioned earlier, the 1992 UN Framework Convention on Climate Change resulted surely insufficient in the fight against climate change; yet, at the same time, it represented a starting

[164] Katrin Gaardbo Kuhn, *Climate Change* in Encyclopedia of the Anthropocene, 2018.
[165] Ibid.
[166] United Nations, *United Nations Framework Convention on Climate Change art.2*, 1992, p.4. Available at: https://unfccc.int/resource/docs/convkp/conveng.pdf
[167] Katrin Gaardbo Kuhn, *Climate Change*, cit.
[168] United Nations, *United Nations Framework Convention on Climate Change art.4*, cit., p.6
[169] United Nations Framework on Climate Change Sites and Platforms, *What is the United Nations Framework Convention on Climate Change?,* accessed on 02/12/2021. Available at: https://unfccc.int/process-and-meetings/the-convention/what-is-the-united-nations-framework-convention-on-climate-change

point on which the international community could lean on and start building a more developed framework on this matter for the time to come.

2.1.2. The Kyoto Protocol to the United Nations Framework Convention on Climate Change

As stated in the preamble of the agreement, following the United Nations Framework Convention on Climate Change, the international community adopted a new legal instrument to further commit itself to tackle climate change. Although adopted in 1997, due to a complex ratification process which led to the desertion of two of the most polluting countries in the world (i.e. the United States and China), the Kyoto Protocol to the United Nations Framework Convention on Climate Change entered into force only in February 2005. The most important feature of the Kyoto Protocol is that it represents the first international agreement binding some industrialised nations (41 countries plus the European Union) to reduce the emissions of some greenhouse gases – more precisely, carbon dioxide (CO2), methane (CH4), nitrous oxide (N2O), hydrofluorocarbons (HFC), perfluorocarbons (PFC) and sulfur hexafluoride (SF6) - to 5.2% below 1990 levels during the commitment period 2008-2012.[170] It should be emphasised that the 2012 Doha Amendment called for a second commitment period, from 2013 to 2020, which however has never entered into force.[171] Interestingly enough, the Kyoto Protocol contains another peculiar element which, at the time of its adoption, was one of a kind. Indeed, it is true that the Protocol aimed at meeting targets mainly through national measures, however, at the same time, it also allowed to decrease GHG emissions through market-based mechanisms – the famous "flexible mechanisms".[172] In this context, it is possible to identify three different mechanisms:

- the Clean Development Mechanism (CDM), defined in article 12, "allows a country with an emission-reduction or emission-limitation commitment under the Kyoto Protocol to implement an emission-reduction project in developing countries".[173] Basically, this mechanism aims at reducing GHGs in the atmosphere by using a system of 'credits' for those developed nations investing on green projects in developing

[170] Istituto Superiore per la Protezione e la Ricerca Ambientale, *The Kyoto Protocol*, ISPRA, accessed on 02/12/2021. Available at: https://www.isprambiente.gov.it/en/services/emission_trading_registry/context/the-kyoto-protocol
[171] United Nations Framework on Climate Change Sites and Platforms, *What is the United Nations Framework Convention on Climate Change?,* cit.
[172] Ibid.
[173] United Nations Framework on Climate Change Sites and Platforms, *The Clean Development Mechanism,* accessed on 02/12/2021. Available at: https://unfccc.int/process-and-meetings/the-kyoto-protocol/mechanisms-under-the-kyoto-protocol/the-clean-development-mechanism

countries, thus fostering at the same time green economic development in these areas and meeting the emissions targets at the global level.[174] An activity that could be undertaken in this context could be the installation of solar panels in order to electrify a remote rural area in a developing nation, thus avoiding the use of polluting substances.[175]

- Secondly, the Join Implementation (JI) mechanism, described in article 6, "allows a country with an emission reduction or limitation commitment under the Kyoto Protocol to earn emission reduction units (ERUs) from an emission-reduction or emission removal project in another Party".[176] Similarly to the previous approach, the JI mechanism exploits the so-called 'sinks', which are implemented by a party of the agreement in another nation in order to remove GHG emissions from the atmosphere and meet the targets of the Kyoto Protocol. An example of successful JI mechanism project is the planting of trees in a developing country.[177]
- Finally, the International Emission Trading (ET) mechanism, defined in article 17, "allows the exchange of emission credits between industrialised countries and economies in transition".[178] Basically, this is a system of exchange, where a country that has been able to limit its GHG emissions can sell the remaining part to another country that has not been able to respect its commitment. In a way, this mechanism allows to reduce global GHG emissions, even when some countries are not able to meet the requested targets.

To conclude, although the Kyoto Protocol represented a landmark in the legal international framework in the context of climate change, scholars highlighted how results are far from being positive. Indeed, besides the fact that China and the United States were not bound by the Protocol, it has been argued that numerous participant states had not been able to meet the targets.[179] Therefore, this has led scholars to claim that, overall, benefits for the environment through the Kyoto Protocol has been extremely limited.

[174] Brian Duignan, *The Kyoto Protocol*, 2007, accessed on 02/12/2021. Available at: https://www.britannica.com/event/Kyoto-Protocol
[175] Ibid.
[176] United Nations Framework on Climate Change Sites and Platforms, *The Clean Development Mechanism,* cit.
[177] Brian Duignan, *The Kyoto Protocol*, cit.
[178] Istituto Superiore per la Protezione e la Ricerca Ambientale, *The Kyoto Protocol*, cit.
[179] Brian Duignan, *The Kyoto Protocol*, cit.

2.1.3. The 2015 Paris Agreement

In the XXI century, with climate change increasingly becoming a more daunting and dangerous threat to humankind, the international community decided to further strengthen its commitment to combat this phenomenon and its negative consequences. It resulted in the adoption of the Paris Agreement by 196 countries in December 2015, a legally binding international treaty on climate change, which builds its framework on the UNFCCC. Despite it may appear extremely similar to the previous climate change agreements, in reality, the Paris Agreement represents a milestone in this context, since it is the first-ever universal, legally binding global climate change agreement.[180]

As stated in article 2 of the treaty, its main goal is to "[hold] the increase in the global average temperature to well below 2°C above pre-industrial levels and [pursue] efforts to limit the temperature increase to 1.5°C above pre-industrial levels".[181] As such, parties of the treaty are requested to reach global peaking of GHG emissions as soon as possible and attempt to achieve a climate neutral by mid-century, recognizing however that this may take longer for developing nations.[182] Furthermore, it has been established a complex framework, which aims at supporting countries in need (i.e. developing countries) as concerns financial, technical and capacity building aspects in the fight against climate change. As regards the first element, it has been stated in the agreement, once again, that developed nations should provide financial assistance to poorer and more vulnerable countries, thus financing green projects aimed at fostering both mitigation and adaptation in the context of climate change.[183] Additionally, in relation to technology, the Paris Agreement highlights the importance of improving technological development as well as technological transfer to poorer countries in order to improve resilience and tackle climate change.[184] Finally, as regards the last aspect (i.e. capacity building), the Agreement clearly emphasises how some countries may not be ready to face the incoming threats deriving from climate change. As such, as article 7 paragraph 7 specifies,

"Parties should strengthen their cooperation on enhancing action on adaptation […], including with regard to:
(a) Sharing information, good practices, experiences and lessons learned, including, as appropriate, as these relate to science, planning, policies and implementation in relation to adaptation actions;

[180] Directorate-General for Climate Action, *Paris Agreement*, European Commission, accessed on 30/10/2021. Available at: https://ec.europa.eu/clima/eu-action/international-action-climate-change/climate-negotiations/paris-agreement_en
[181] United Nations, *Paris Agreement art.2*, 2015, p.3
[182] Ibid., *art.4*, p.4
[183] United Nations Framework Convention on Climate Change Sites and Platforms, *The Paris Agreement*, accessed on 29/10/2021. Available at: https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement
[184] Ibid.

[…] (c) Strengthening scientific knowledge on climate, including research, systematic observation of the climate system and early warning systems, in a manner that informs climate services and supports decision-making;
(d) Assisting developing country Parties in identifying effective adaptation practices, adaptation needs, priorities, support provided and received for adaptation actions and efforts, and challenges and gaps, in a manner consistent with encouraging good practices; and
(e) Improving the effectiveness and durability of adaptation actions".[185]

Moreover, it should not be forgotten that the implementation of the Paris Agreement works on a five-year cycle; that is to say that the parties of the treaty meet to discuss the achievements undertaken on the subject as well as to submit their projects on how to further tackle climate change and to reduce GHG emissions (the so-called nationally determined contributions – NDCs) every five year.[186] Of course, this process must ensure total transparency and maximum accountability.

Yet, despite the Paris Agreement may represent, at least in words, a breakthrough in the fight against climate change, results are far from being positive and parties' commitment is far from being enough. Countries have increased the level of ambition to reduce GHG emissions, however, data indicates how this change will have almost no impact since it will be less than 1%.[187] This lack of commitment will result, as highlighted by the Executive Secretary of UN Climate Change, Patricia Espinosa, in the failure for the international community to meet the goals requested by the Paris Agreements (see figure 2.1.).[188]

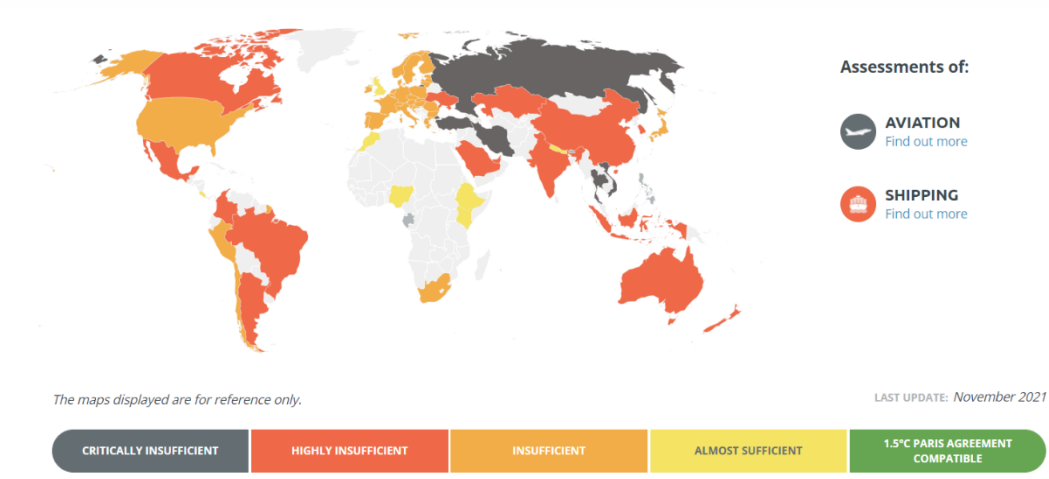

Figure 2.1. Climate Action Tracker website, The Paris Agreement by country, 2021

[185] United Nations, *Paris Agreement art.7*, 2015, p.10
[186] Directorate-General for Climate Action, *Paris Agreement*, cit.
[187] United Nations Framework Convention on Climate Change Sites and Platforms, *Climate Commitments Not On Track to Meet Paris Agreement Goals*, accessed on 29/10/2021. Available at: https://unfccc.int/news/climate-commitments-not-on-track-to-meet-paris-agreement-goals-as-ndc-synthesis-report-is-published
[188] Ibid.

2.1.4. The Sustainable Development Goals

In 2015, member states of the United Nations, under the 2030 Agenda for Sustainable Development, adopted the notorious 17 Sustainable Development Goals (SDGs), which succeeded the previous Millennium Development Goals (MDGs). As the UN website reads, "the Sustainable Development Goals are a universal call to action to end poverty, protect the planet and improve the lives and prospects of everyone, everywhere".[189] In this context, therefore, addressing the causes of climate change in our society becomes vital for member states, especially because its negative consequences will likely put at risk the achievement of the project though a sort of domino effect (see figure 2.2.). For instance, environmental change, more precisely rising temperatures, will lead to the loss of several species and ecosystems, which in turn will reduce agricultural and fishing yields, thus contributing to food insecurity and affecting the livelihoods of many.[190] This is to say that, even though only one goal is specifically targeting climate change ('Goal 13 - take urgent action to combat climate change and its impacts'), all the other 16 goals follow the same direction and serve to achieve the ultimate goal: having a more sustainable world. In addition, as the UN Secretary-General Antonio Guterres highlighted in 2019, the Sustainable Development Goals can be implemented on three levels: at the global level (i.e. to secure greater leadership, more resources and smarter solutions), at the local level (i.e. to incorporate the requested actions into local policies, budgets, institutions and regulatory frameworks) and, finally, at the people level (i.e. to make sure to involve youth, civil society, the media, the private sector, and other stakeholders to generate a continuous push towards a more sustainable world).[191]

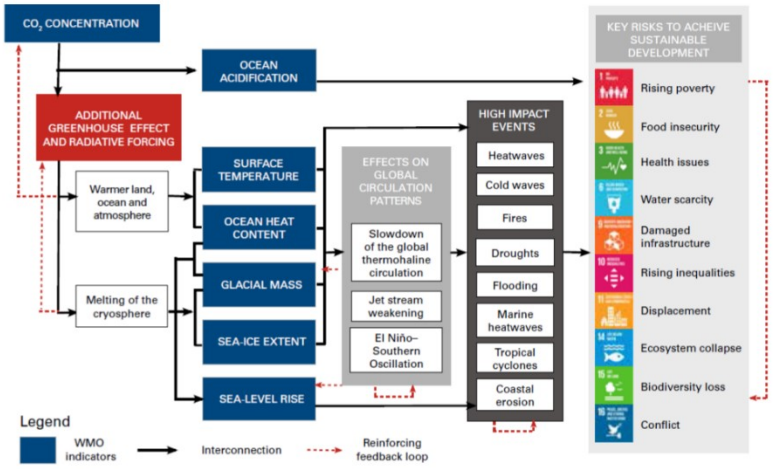

Figure 2.2. Selected climate change-related risks to the achievement of the SDGs, WMO, State of the global climate 2020, 2021

[189] UN Sustainable Development Goals, *The Sustainable Development Agenda*, United Nations, accessed on 29/10/2021. Available at: https://www.un.org/sustainabledevelopment/development-agenda/
[190] World Meteorological Organization, *State of the Global Climate 2020,* cit., p.31
[191] Antonio Guterres, *Remarks to High-Level Political Forum on Sustainable Development*, UN, 2019. Available at: https://www.un.org/sg/en/content/sg/speeches/2019-09-24/remarks-high-level-political-sustainable-development-forum

The Sustainable Development Agenda is for sure an ambitious plan to reduce poverty, diminish inequalities and tackle climate change; yet its success is still uncertain. Even before the pandemic, which for sure has slowed down the process, the world was not on track to meet its commitments.[192] Therefore, unless the international community takes a further, serious commitment on this topic, as other international environment-related agreements have already proved, the Sustainable Development Agenda will also result extremely ineffective in the fight against climate change.

2.2. Policy Framework on Migration and Climate Change

2.2.1. International and Regional Refugee Protection Instruments: The 1951 UN Convention on Refugees, The Organisation of African Unity Refugee Convention and the Cartagena Declaration on Refugees

The international community is currently lacking a global instrument which may serve to protect those people fleeing the territory of origin due to the exacerbation of climate conditions, commonly known as environmental refugees. In contrast, there are existing legal principles and several branches of law, including provisions under international human rights law, humanitarian law, environmental law and nationality law, which are applicable to safeguard these people.[193]

The international legal regime on the matter lays its foundation on the 1951 UN Refugee Convention and its 1967 Protocol relating to the status of refugee, which represent two of the most important legal instruments dealing with the protection of these people worldwide. These two instruments, under article 1 of the Convention, define refugees as people who own

"a well-founded fear of being persecuted for reasons of race, religion, nationality, membership of a particular social group or political opinion, [being] outside the country of nationality and unable or, owing to such fear, unwilling to avail himself of the protection of that country; or who, not having a nationality and being outside the country of his former habitual residence as a result of such events, is unable or, owing to such fear, is unwilling to return to it".[194]

According to this definition, therefore, refugees must fulfil specific and extremely precise criteria in order to avail themselves of the Convention. However, as it is well established by

[192] Clemens Gruenbuehel, Ivonne Lobos Alva, Natalia Ortiz, Kuntum Melati and Karen Brandon, *Let's get the SDGs back on track*, Stockholm Environment Institute, 2020. Available at: https://www.sei.org/perspectives/lets-get-the-sdgs-back-on-track/#:~:text=As%20the%20SDGs%202020%20Report,of%20progress%20have%20been%20reversed%20

[193] Alex Flavell et al., *IOM Outlook on Migration, Environment and Climate Change*, cit., p.31

[194] UNHCR Communications and Public Information Service, *Convention and Protocol relating the Status of Refugees*, UNHCR, 2010, p.14. Available at: https://www.unhcr.org/3b66c2aa10.html

the academia, the majority of climate refugees does not meet these criteria and, as such, does not fall under the definition of the 1951 UN Convention on refugees and its related 1967 Protocol. Indeed, as evidence has shown, only a small share of these people worldwide can benefit from the status of refugee in the context of climate change – for example, people forced to abandon the place of origin due to armed conflicts, which may be triggered by environmental stressors.[195] The inoperability of the 1951 UN Refugees Convention in relation to climate change is given by a number of different reasons. Some stakeholders argue, for example, that the inclusion of environmental causes in the above-mentioned definition may complicate and confuse UNHCR's efforts to protect victims of persecutions and armed conflicts; others claim that broadening the definition will undoubtedly lead to a massive increase of requests of people asking for the status of refugee, thus creating logistic problems to the UN organisation.[196] Yet, more specifically, the reason behind this inoperability must be analysed in the historical context in which the document was created. Indeed, the 1951 Convention and the resulting refugee definition are a product of Europe's post-WW2 period, time in which the international community had to deal with mass displacement caused by a cruel war and widespread violence.[197] Despite the many attempts to find an international legal instrument to protect environmental refugees in the context of the 1951 UN Convention - some actors have suggested to draft and adopt a completely new legal instrument, some others have instead proposed to simply include an additional element ("fleeing from environmental reasons") in the Convention-, a solution has not been found yet.[198] For sure, this uncertainty as well as the lack of a legal definition of environmental refugees are undoubtedly having severe repercussions on the lives of many people, who, although being forced to flee due to environmental reasons, cannot be protected under the aforementioned Convention.

In contrast to the 1951 UN Refugee Convention and its 1967 Protocol, there are other regional instruments in Africa and Latin America, which have enriched the classic definition of refugee, thus offering a much broader scope of action. These include, for instance, the Organisation of African Unity (OAU) Refugee Convention and the Cartagena Declaration on Refugees. The

[195] Eugénie Delval, *From the U.N. Human Rights Committee to European Courts: Which protection for climate-induced displaced persons under European Law?*, EU Migration Law Blog, 2020. Available at: https://eumigrationlawblog.eu/from-the-u-n-human-rights-committee-to-european-courts-which-protection-for-climate-induced-displaced-persons-under-european-law/
[196] Albert Kraler et al., *Climate Change and* Migration, cit., p.43
[197] Vikram Odedra Kolmannskog, Future Floods of Refugees, cit., p.25
[198] Ibid., p.31

former, under article 1 paragraph 2, extends the so-called refugee protection in some countries of the African continent also to

"every person who, owing to external aggression, occupation, foreign domination or events seriously disturbing public order in either part or the whole of his country of origin or nationality, is compelled to leave his place of habitual residence in order to seek refuge in another place outside his country of origin or nationality."[199]

Most importantly, despite the fact that the transposition of such definition into national laws by signatory parties is far from complete, some African states applied in practice this definition to people fleeing Somalia's severe droughts in 2011-2012, thus including the environment in this realm.[200] In reality, the situation in the country not only deteriorated because of environmental stressors (i.e. droughts), but a series of other factors - including the incapacity of the central government to provide relief to the local population as well as the dramatic situation caused by the ongoing conflict and the wave of violence present in the country - triggered the 'seriously disturbing public order' element of the Convention.[201] Nevertheless, this may represent an important landmark for the evolution of the subject also at the international level.

Following a similar path, the 1984 Cartagena Declaration on Refugees also applies a broader definition than the 1951 UN Refugee Convention. Indeed, according to article 3 paragraph 3, the agreement considers refugees also those "persons who have fled their country because their lives, safety or freedom have been threatened by generalized violence, foreign aggression, internal conflicts, massive violation of human rights or other circumstances which have seriously disturbed public order".[202] It is therefore crystal-clear that, as in the OAU Convention, also the 1984 Cartagena Declaration, when it comes, will serve to protect people who are affected by climate disasters (e.g. cyclones, tornadoes, hurricanes as well as floods) and, as such, are forced to flee their territory of origin temporarily or permanently.

2.2.2. The 1998 Guiding Principles on Internal Displacement and the 2009 African Union Convention for the Protection and Assistance of Internally Displaced Persons in Africa (the Kampala Convention)

As it has already been discussed earlier in this thesis, climate change will surely trigger the displacement of an important share of the population worldwide, especially in the poorer

[199] Organisation of African Unity, *OAU Convention Governing the Specific Aspects of Refugee Problems in Africa*, Addis-Ababa, 1969, p.3
[200] Albert Kraler et al., *Climate Change and* Migration, cit., p.44
[201] Jane McAdam, *From the Nansen Initiative to the Platform on Disaster Displacement*, cit., p.1536
[202] *Cartagena Declaration on Refugees*, Colombia, 1984, p.4

countries of the Global South. Yet, as we know, the majority of people escaping the dire consequences of climate change will not move internationally; on the contrary, most of these people will remain within their national borders and under the protection of national authorities (see chapter 1.5. 'The dimensions of migration', p.29). For this reason, the aforementioned legal instruments outlining the protection of people crossing national borders, the so-called [environmental] refugees, cannot be applied in this context. People remaining in the country of their nationality, also known as internally displaced persons (IDPs), are considered

"*persons or groups of persons who have been forced or obliged to flee or to leave their homes or places of habitual residence, in particular as a result of or in order to avoid the effects of armed conflict, situations of generalized violence, violations of human rights or natural or human-made disasters, and who have not crossed an internationally recognized State border*".[203]

It must be argued that IDPs do not represent an issue in terms of protection standards when the central government is able to provide relief and assistance in situ; yet the situation becomes problematic when the same government is not able to do so or undertake certain actions in order to arbitrary discriminate certain groups of people. Therefore, in order to address this protection gap, the UNHCR published in 1998 the Guiding Principles on Internal Displacement, a document establishing 30 standards for protection, which are adjusted from human rights and humanitarian law and applied to IDPs.[204] The Guiding Principles, which addresses all phases of displacement, contain important provisions, including a prohibition on arbitrary displacement, a demand that governments must protect these people against murder, torture and violence as well as a statement that authorities must help IDPs to return home voluntarily or resettle elsewhere.[205] Furthermore, although the document is not binding, the 1998 Guiding Principles on Internal Displacement have received considerable attention by some stakeholders of the international community. Yet, at the same time, much more can and should be done. Indeed, according to the Global Database on IDP Laws and Policies, by June 2020, "only 26 IDP laws (i.e. binding regulations) in 14 countries and 60 policies (i.e. guidelines outlining the main goals of the government) in 36 countries were recorded" (see figure 2.3.).[206]

Figure 2.3. Database on IDP laws and policies, Global Protection Cluster website, 2021

[203] United Nations Office for the Coordination of Humanitarian Affairs, *Guiding Principles on Internal Displacement,* United Nations, 1998, p.1
[204] Albert Kraler et al., *Climate Change and* Migration, cit., p.44
[205] Rachel Baird et al, *Human tide: the real migration crisis*, Christian Aid, 2007, p.11
[206] Albert Kraler et al., *Climate Change and* Migration, cit., p.45

In this respect, the African Union adopted in 2009 an important agreement, the African Union Convention for the Protection and Assistance of Internally Displaced Persons in Africa, informally known as the Kampala Convention, which essentially uses the 1998 Guiding Principles of Internal Displacement in a binding form at the continental level.[207] As stated in the preamble, with the Kampala Convention, the Heads of State and Government of the African Union, "being conscious of the gravity of the situation […] and the suffering […] of internally displaced persons, committed […] to providing durable solutions to situations of IDPs by establishing an appropriate legal framework for their protection and assistance". [208] The agreement not only is important in Africa because it aims at safeguarding IDPs and reducing their numbers, but also because it is the first legally binding instrument as regards this category of people.[209] Most importantly, it must be highlighted that the agreement considers extremely relevant the context in which it has been signed, thus focusing on specific, typical issues of the African continent. For this reason, it combines international human rights as well as humanitarian law principles of the 1998 Guiding Principles of Internal Displacement, considering at the same time also the important elements of norms typically contained in African regional human rights frameworks.[210] In addition, as displayed in article 2, the Convention also aims at "identifying the responsibilities and obligations of both states and non-state actors related to preventing and responding to internal displacement".[211]

To conclude, although the Kampala Convention has not been ratified by an important number of signatories countries yet (only 29 countries out of 40),[212] the agreement represents an incredible achievement for the protection of IDPs, a category of people who remains too often forgotten.

[207] Alex Flavell et al., *IOM Outlook on Migration, Environment and Climate Change*, cit., p.88
[208] African Union, *African Union Convention for the Protection and Assistance of Internally Displaced Persons in Africa (Kampala Convention*), 2009, p.4
[209] Internal Displacement Monitoring Centre, Global Report on Internal Displacement, cit., p.18
[210] Romolo Adeola, *The Kampala Convention and the right not to be arbitrarily displaced*, Forced Migration Review, accessed 29/10/2021. Available at: https://www.fmreview.org/GuidingPrinciples20/adeola
[211] Albert Kraler et al., *Climate Change and* Migration, cit., p.54
[212] Global Engagement Network on Internal Displacement in Africa, *Ratification of the Kampala Convention*, GENIDA, accessed on 06/12/2021. Available at: https://genida.org/kampala-convention/

2.2.3. The 2015 Nansen Initiative on Disaster-Induced Cross-Border Displacement and the 2016 Platform on Disaster Displacement

In the second decade of the XXI century, with climate change and displacement increasingly reaching unsustainable levels for the world, especially in developing countries, the international community decided to further strengthen its commitment to finding a solution on the matter. It resulted a four-year-long process of meetings and discussions, which, starting in 2011, culminated with the endorsement of the Agenda for the Protection of Cross-Border Displaced Persons in the Context of Disasters and Climate Change in 2015 – a document which also paved the way for a new wave of policy-implementation on the matter (see figure 2.4.).

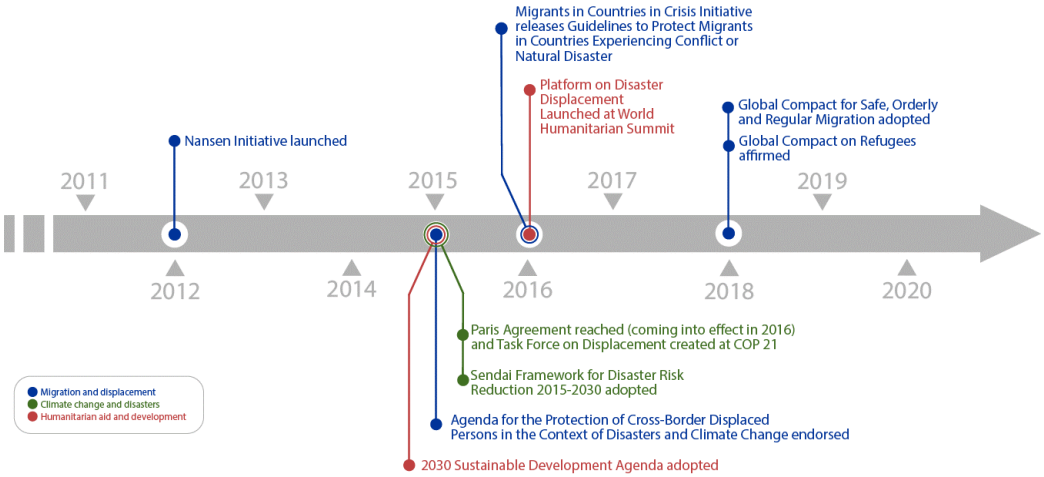

Figure 2.4. Milestones in the global governance of environmental migration and displacement (2011 – 2020), Kraler et al., Climate Change and Migration: Legal and policy challenges and responses to environmentally induced migration, 2020

The beginning of this whole process, as previously mentioned, dates back to February 2011. Indeed, the UNHCR organized in this period a series of meetings on climate change and displacement, in which the different stakeholders involved strongly emphasised the urgency to establish a legal instrument or a global guiding framework "to apply to situations of external displacement other than those covered by the 1951 Convention, especially displacement resulting from sudden-onset disasters".[213] Furthermore, these discussions provided important contributions, leading, among others, to the adoption of the Nansen Principles (i.e. a pledge to develop a global guiding framework) by the international community during the Nansen Conference on Climate Change and Displacement in the XXI century in June of the same year. Yet, despite positive premises, consensus on the establishment of a global guiding framework was not found. Only five countries (i.e. Costa Rica, Germany, Mexico, Norway and Switzerland) lent their formal support and, as such, in October 2012, they officially launched

[213] Guy Goodwin-Gill and Jane McAdam, *Climate Change, Disasters and Displacement*, cit., p.17

a new intergovernmental process on the matter: it was the beginning of the Nansen Initiative on Disaster-Induced Cross-Border Displacement.[214] This initiative spurred the establishment of a state-led, bottom-up process, whose main objective was to broaden consensus on key principles and elements that are vital for the protection of all those people who are displaced in the context of natural disasters across borders.[215] The process behind the Nansen Initiative was extremely successful and only terminated when 109 countries endorsed the notorious Agenda for the Protection of Cross-Border Displaced Persons in the Context of Disasters and Climate Change. Concluded in October 2015, the Agenda is a non-binding document, which provides a toolbox of concrete policy options and proposes a series of recommendations for future work addressing displacement, migration and planned relocation in the context of environmental change at the national, regional and international levels.[216]

Due to the large success of this project, already in May 2016, the successor of the Nansen Initiative was launched: the Platform on Disaster Displacement. The Platform is a state-led process, which aims at developing cooperation between all stakeholders involved on disaster displacement – including policymakers, the academia, practitioners – in order to build "a multi-stakeholder forum for dialogue, information sharing as well as policy and normative development".[217] Furthermore, as the official website reads, the main objective of the Platform on Disaster Displacement is "to follow-up on the work started by the Nansen Initiative, and to implement the recommendations of the Protection Agenda, a toolbox to better prevent and prepare for displacement and to respond to situations when people are forced to find refuge, within their own country or across the borders".[218] The Platform on Disaster Displacement, following its main priorities (i.e. addressing data and policy gaps, strengthening cooperation, enhancing the use of identified practices and promoting policy as well as normative development)[219] is currently working at full steam in order to ensure the achievement of its ultimate goal. Indeed, despite the ongoing COVID-19 pandemic, the process has never stopped and discussions as well as cooperation between stakeholders have continued virtually during this strange period we have been living in.

[214] Jane McAdam, *From the Nansen Initiative to the Platform on Disaster Displacement*, cit., p.1521
[215] Alex Flavell et al., *IOM Outlook on Migration, Environment and Climate Change*, cit., p.14
[216] Jane McAdam, *From the Nansen Initiative to the Platform on Disaster Displacement*, cit., p.1518
[217] Platform on Disaster Displacement, *Our Responses,* accessed on 06/12/2021. Available at: https://disasterdisplacement.org/the-platform/our-response
[218] Ibid.
[219] Jane McAdam, *From the Nansen Initiative to the Platform on Disaster Displacement*, cit., p.1533

2.2.4. The Sendai Framework for Disaster Risk Reduction 2015-2030

The Sendai Framework for Disaster Risk Reduction 2015-2030, simply known as the Sendai Framework, is a 15-year non-binding document adopted in 2015 at the third United Nations World Conference on Risk Reduction in Sendai, Japan. It represents the first major agreement after the establishment of the 2015 UN Development Agenda, offering states the opportunity to take concrete actions to safeguard development gains from the risk of disaster.[220] It should not be forgotten that, although it has a precise objective, the Sendai Framework does not work independently; on the contrary, it works jointly with the 2030 Agenda and some of its most important achievements - i.e. the Paris Agreement, the Addis Ababa Action Agenda on Financing for Development, the New Urban Agenda, and ultimately the Sustainable Development Goals.[221] It succeeds the previous Hyogo Framework for Action 2005-2015, another non-binding legal tool on possible responses to climate change and disasters, which focuses on the implementation of two important concepts: disaster preparedness as well as culture of safety and resilience.[222] Even though the new legal instrument is continuing the commitment undertaken by its predecessor, it goes even further. Indeed, while surely addressing the consequences of disasters, it especially centres its attention on the prevention of future disasters and the reduction of possible risks, thus focusing on the exposure to hazards, vulnerability and capacity as well as hazard's characteristics.[223] In this context, as displayed in article 17, the Sendai Framework advocates for

"[the prevention and the reduction of] existing disaster risk through the implementation of integrated and inclusive economic, structural, legal, social, health, cultural, educational, environmental, technological, political and institutional measures that prevent and reduce hazard exposure and vulnerability to disaster, [as well as for increasing] preparedness for response and recovery, and thus strengthening resilience".[224]

Finally, it should be emphasised that in order to assess whether or not the international community is on track in the implementation of the correct measures as well as in the achievement of the Sendai Framework's ultimate goal, as article 18 highlights, seven global targets have been agreed. These include

"[the reduction of] global disaster mortality by 2030 […]; [the reduction of] the number of affected people worldwide by 2030 […]; [the reduction of] direct disaster economic loss in relation to global gross domestic product (GDP) by 2030; [the reduction of] disaster damage to critical infrastructure and disruption of basic

[220] UNDRR, *What is the Sendai Framework for Disaster Risk Reduction?,* accessed on 27/10/2021. Available at: https://www.undrr.org/implementing-sendai-framework/what-sendai-framework
[221] Ibid.
[222] Bernhard Perchining, Lucas Rasche and Katharina Schaur, *Migrants in Countries in Crisis - Summary Paper: Humanitarian Aid and Civil Protection Policies in the European Union and the MICIC Agenda*, International Centre for Migration Policy Development (ICMPD), 2017.
[223] UNDRR, *What is the Sendai Framework for Disaster Risk Reduction?,* cit.
[224] United Nations, *Sendai Framework for Disaster Risk Reduction 2015-2030 article 17*, p.12

services by 2030; [the increase of] the number of countries with national and local disaster risk reduction strategies by 2020; [the enhancement of] international cooperation to developing countries through adequate and sustainable support to complement their national actions for implementation of the present Framework by 2030; [and finally the increase of] the availability of and access to multi-hazard early warning systems and disaster risk information and assessments to people by 2030".[225]

2.2.5. The 2016 New York Declaration for Refugees and Migrants and the Two 2018 Global Compacts: the Global Compact on Refugees and the Global Compact for Safe, Orderly, and Regular Migration

Following the period of discussions and policy implementation in the context of climate change and displacement of the last few years, the UN General Assembly adopted in September 2016 the so-called New York Declaration for Refugees and Migrants. The document reaffirms the great responsibility of the international community in the field of displacement and restates the important commitments undertaken by world leaders to protect those people who are forced to leave their territory of origin. Additionally, not only contains the New York Declaration dauntless commitments to tackle the issue of today, but it also prepares the world for the challenges of tomorrow - e.g. protecting human rights of all refugees and migrants, condemning all acts of xenophobia against these people, and improving the delivery of humanitarian and development assistance.[226] There is no doubt that the New York Declaration is a tremendously important achievement, which, as proudly stated by Filippo Grandi, UN High Commissioner for Refugees, "marks a political commitment of unprecedented force [..] and fills what has been a perennial gap in the international protection system – that of truly sharing responsibility for refugees".[227] Finally, to conclude this part on the New York Declaration for Refugees and Migrants, it must be emphasised that, most importantly, the document also urged the parties to adopt, as soon as possible, at the international level, a Global Compact on Refugees[228] as well as a Global Compact for Migrations[229] – commonly known as Global Compact for Safe, Orderly and Regular Migrations. Although the two agreements follow the same direction, they must be considered and analysed independently.

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[225] Ibid. *article 18*, p.12

[226] United Nations, *The New York Declaration*, accessed on 07/12/2021. Available at: https://refugeesmigrants.un.org/declaration

[227] UNHCR, *The New York Declaration for Refugees and Migrants*, accessed on 07/12/2021. Available at: https://www.unhcr.org/new-york-declaration-for-refugees-and-migrants.html

[228] United Nations General Assembly, *Resolution adopted by the General Assembly on 19 September 2016 – 71/1 New York Declaration for Refugees and Migrants*, United Nations, 2016, p.16. Available at: https://www.un.org/en/ga/search/view_doc.asp?symbol=A/RES/71/1

[229] Ibid., p.21

In respect to the Global Compact for Safe, Orderly and Regular Migrations, the Heads of State and Government and the High Representatives, meeting in Morocco, adopted in 2018 a non-binding intergovernmental agreement that addresses the numerous challenges and opportunities on the field of international migrations. As clearly stated in the preamble, not only is the Global Compact a landmark in this matter, but it also fosters cooperation among the parties, since it is acknowledged that no state can address migrations alone.[230] Furthermore, although recognising the need for a common global approach, the Global Compact addresses the risks and challenges of migrations also at the local level – i.e. in the countries of origin, transit and destination -, which are essential to improve the lives of many individuals or even whole communities.[231] More specifically, in paragraph 16, the agreement develops 23 different objectives aiming at better managing all phases of migration at the local, national, regional and international levels. Among these, we can highlight objective 3 ('Provide accurate and timely information at all stages of migration'), objective 7 ('Address and reduce vulnerabilities in migration'), objective 15 ('Provide access to basic services for migrants) and objective 17 ('Eliminate all forms of discrimination and promote evidence-based public discourse to shape perceptions of migration').[232] In addition, in the context of the climate change-migration nexus, for the purposes of this analysis, it results extremely relevant also objective 2 ('Minimize the adverse drivers and structural factors that compel people to leave their country of origin'), which addresses the root causes of migration, also in the context of sudden-onset hazards, and objective 5 ('Enhance availability and flexibility of pathways for regular migration'), which identifies ways to strengthen opportunities for regular migration for those impacted by slow-onset natural events.[233]

The Global Compact on Refugees, also adopted in December 2018 after almost two years of negotiations between the different stakeholders involved (e.g. member states, international organisations, the academic world, the civil society), although not legally binding, represents "the political will and ambition of the international community as a whole for strengthened cooperation and solidarity with refugees and affected host countries".[234] The document is divided into four distinct parts – an introduction defining background, guiding principles and

[230] United Nations, *Global Compact for Safe, Orderly and Regular Migration*, 2018, p.2
[231] UNHCR, *Global Compact for Migration*, United Nations, accessed on 07/12/2021. Available at: https://refugeesmigrants.un.org/migration-compact
[232] United Nations, *Global Compact for Safe, Orderly and Regular Migration*, 2018, p.6
[233] Albert Kraler et al., *Climate Change and* Migration, cit., p.54
[234] United Nations General Assembly, *Report of the United Nations High Commissioner for Refugees – Global Compact on Refugees*, 2018, p.1. Available at: https://www.unhcr.org/gcr/GCR_English.pdf

objectives; two core sections introducing the Comprehensive Refugee Response Framework (it promotes a vision on how to respond to this phenomenon during times of crises) and the Programme of Action (it defines relevant measures to take in this context); and, finally, a section for follow up and review. These different elements, working together, aim at achieving the Global Compact's ultimate objectives, that is to say "[easing] pressures on host countries; [enhancing] refugee self-reliance; [expanding] access to third country solutions; and [supporting] conditions in countries of origin for return in safety and dignity".[235] Furthermore, as also emphasised in the Global Compact for Migrations, the parties recognised the impossibility for states to address the refugees situation and ensure their protection independently, since this represents a global issue that can only be solved through international cooperation and a responsibility-sharing mechanism. In this context, climate change and natural disasters do not represent a focal point of the agreement, nevertheless they are mentioned on several occasions throughout the text. For example, the Global Compact on Refugees acknowledges that the climate, natural disasters and environmental degradation represent influential drivers of displacement and are increasingly affecting people in different areas of the globe; additionally, it also emphasises the need for the international community to reduce the risk of disasters as well as to promote the inclusion of disaster risk reduction in countries' national preparedness planning.[236]

As it has been possible to understand throughout this chapter, the international community is currently working on finding sustainable solutions in the context of both climate change and migrations. Although important achievements in both fields have been reached over the decades, especially in the XXI century (the Paris Agreement, the 2030 Development Agenda, the 2018 Global Compacts, etc.), the commitment of the parties cannot be considered enough. Furthermore, probably still influenced by strong economic ideals, the implementation of new treaties, agreements and other relevant legal tools on important topics, such as climate change and migration, is surely too slow as well as too weak, especially considering that many of these agreements are not legally binding for the signatory parties. Therefore, to conclude, it is possible to claim that countries of the world, international organisations, the private sector and, why not, even us citizens can (and must) do much more in the context of climate change, migrations and the nexus between these two phenomena. Only time will tell us how the future legal framework will be shaped and what future generations will achieve on these important

[235] Ibid., p.2
[236] Albert Kraler et al., *Climate Change and* Migration, cit., p.56

themes; however, for the time being, we can only work with what we have and push forward the promotion of increasingly developed legal tools.

3. Chapter Three: Focus Africa

After several decades of research on the topic, the scientific community unanimously asserts that human activities have been contributing to the exacerbation of Earth's climate conditions for at least one century. As we know, however, the African continent has not been particularly involved in the escalation of this phenomenon; on the contrary, although with increasing levels, Africa is the region that contributes the least to GHG emissions. Currently, the whole continent releases in the atmosphere only 4% of global CO2 emissions,[237] a ridiculous amount if compared to developed nations such the United States (15%) and the European Union (9%) or emerging nations such as China (30%).[238]

Yet, the uninterrupted release of greenhouse gases in the atmosphere by the nations of the world has been leading, among others, to a dangerous increase of global temperatures, which will surely have tremendous negative repercussions on the planet and on the lives of the vast majority of its inhabitants in different parts of the world. As already mentioned, consequences of climate change will be felt the most in the poorest countries of the Global South due to the lack of necessary means of adaptation as well as required resources to combat the phenomenon. Furthermore, it should be taken into consideration that, generally, unlike in developed nations, peoples of the Global South, especially in Africa, cannot rely on the intervention of national and regional bodies, since these institutions are unable to manage the effects of climate change and provide relief to the affected populations.[239]

The previously mentioned 2030 Development Agenda, above all, aims at reducing this development gap between industrialised nations of the Global North and developing countries of the Global South, trying also to tackle or at least mitigate climate change and its negative consequences. Truth is that Africa represents the only continent which failed to materialise the vast majority of the UN Millennium Development Goals (e.g. Goal 1 'Eradicate extreme poverty and hunger'; Goal 7 'Integrate principles of sustainable development into country policies and reverse loss of environmental resources')[240] and, unless a serious commitment is taken, it will also fail to meet what established in the 2030 Sustainable Development Agenda. However, as critiques highlight, MDGs "represented a United Nation-led consultations in

[237] Lacour Ayompe, Steven Davis and Benis Egoh, *Trends and drivers of African fossil fuel CO2 emissions 1990-2017*, Environmental Research Letters, 2020, p.1
[238] United States Environmental Protection Agency, *Global Greenhouse Gas Emissions Data*, accessed on 10/12/2021. Available at: https://www.epa.gov/ghgemissions/global-greenhouse-gas-emissions-data
[239] Michael Werz and Laura Conley, *Climate Change, Migration, and Conflict*, cit., p.3
[240] Anita Bianchi, *From MDGs to SDGs: Where Does Africa Stand?*, ISPI, 2015, p.1

which international institutions dominated by powerful western countries played a crucial role",[241] thus emphasising the peculiarity as well as the dissimilarity of the African background in respect to developed Western nations. In this context, as scholars emphasise, these factors represented an important element which led to the failure of this ambitious plan in Africa.

Yet, if the international community as well as African regional and national governments do not effectively address climate change in the region, there will be catastrophic consequences for African states and their peoples. For this reason, in one of its publications, the IPCC drew a number of conclusions, which highlighted the gravity of the situation in the continent. These include that

"a) Africa is one of the most vulnerable continents to climate change and climate variability; b) agricultural production and food security (including access to food) in many African countries and regions will likely be severely compromised by climate change and climate variability; c) climate change will aggravate the water stress currently faced by some countries while several countries, which are currently not at risk, will have to cope with increasing water stress; and d) human health, already compromised by a range of factors, could further be negatively impacted by climate change and climate variability (e.g. malaria in Southern Africa and the Eastern African highlands)".[242]

As easily understandable, this chapter focuses on the negative consequences of climate change in Africa, also taking into consideration the repercussions of the phenomenon on migration patterns – both internally and internationally. Particularly, the chapter centres its attention on the Sahel region, a strip of land, crossing Africa from east to west, between the Sahara Desert and the savannas. This region is analysed in the climate change-migration nexus also because it is (and will be) one of the regions most affected by this phenomenon worldwide, having tremendous consequences on the lives of millions of people, who will have no other choice but migrate.

[241] Adekeye Adebajo and Mark Paterson, *Achieving the Millennium Development Goals (MDGs) in Africa*, Centre for Conflict Resolution, 2013, p.1
[242] Sven Harmeling, Jan Burck and Cristoph Bals, *Adaptation to Climate Change in Africa and the European Union's Development Cooperation*, German Watch, 2007, p.1

3.1. The Sahel Region

With a population of approximately 150 million people, the Sahel is a semiarid strip of land located between the northern arid Sahara Desert and the southern humid savannas. The region stretches for 5.400 kilometres from the Atlantic coast to the Red Sea coast and includes parts of different countries: the Gambia, Guinea-Bissau, Senegal, Mauritania, Mali, Burkina Faso, Algeria, Niger, Nigeria, Cameroon, Chad, Sudan and Eritrea - some people even include in this list Ethiopia, Somalia and some parts of Kenya (see figure 3.1).[243] Due to its climate conditions, the region only counts a few perennial rivers and its vegetation is simply composed by grassland and few shrubs and stunted trees, which of course become more frequent towards the southern parts of the region, where the climate is wetter.[244] Interestingly enough, the name 'Sahel' is not a coincidence. Indeed, being a region of transition between two completely different types of environment, the word 'Sahel' derives from the Arabic 'edge' or 'shore',[245] thus telling us something more about its 'geolocation'. Despite the unwelcoming conditions as well as the unhospitable terrain, the Sahel boosts an incredible diversity of cultures, languages, political entities as well as production systems, which have continuously evolved over a thousand years.[246]

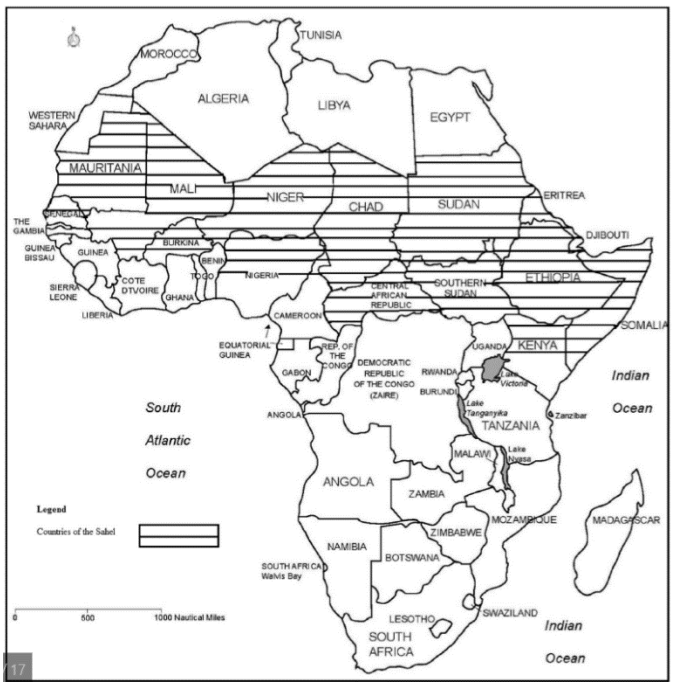

Figure 3.1. The Sahel, Terence Epule et al., Climate change adaptation in the Sahel, 2017

The Sahel represents one of the poorest regions of the world, with the majority of its population affected by extremely low indicators in relation to health, education and living standards. These deficits are furthermore strengthened also by the inability of local and national institutions to

[243] A. Nyong, F. Adesina and B. Osman Elasha*, The value of indigenous knowledge in climate change mitigation and adaptation strategies in the African Sahel*, Mitig Adapt Strat Glob Change, 2007, p.789
[244] Ibid.
[245] Terence Epule Epule, James Ford, Shuaib Lwasa and Laurent Lepage, *Climate Change adaptation in the Sahel*, Environmental Science and Policy, No. 75, Elsevier, 2017, p.122
[246] Michel Mortimore, *Adapting to drought in the Sahel: lessons for climate change*, WIRE's Climate Change, 2010, p.134

react in the face of the region's challenging situations as well as by the increasing number of population levels, which in turn are posing further burdens on the availability of natural resources in an already fragile environment. In this context, it should not be forgotten that the Sahel represents one of the region with the fastest-growing population rate in the whole world and, as stated by the Population Reference Bureau, an American nonpartisan research organisation, it will dramatically increase in the upcoming century to 330 million by 2050 and close to 670 million by 2100.[247]

Sahelian populations are strongly dependent on climate conditions as well as on the availability of natural resources – particularly water. In this regard, it must be highlighted that between 70 and 92% of the total population in the region relies on agricultural and/or livestock production activities, which are fundamental for their survival.[248] Furthermore, when focusing on agriculture, it should also be taken into consideration that only 8% of the Sahel region is arable and only 5% of farming activities are characterised by irrigated agriculture.[249] On the contrary, the sector uses a particular technique, the so-called rainfed agriculture, which is an activity that heavily relies on natural rainfall rather than irrigation systems. Additionally, there is a visible stratification of the livelihood system in the region; while northerly cultures tend to be characterised by pastoralism, southerly cultures are largely sedentary.[250] This is given by the fact that precipitations in the Sahel can vary also depending on the position of a specific area to the Inter-Tropical Convergence Zone, thus ranging from 200mm annually in the northern areas to 600mm in the southern parts.[251] Therefore, all agricultural activities are extremely influenced by climate conditions and can only be carried out in the rainy season, a four-month period which generally lasts from June to September.[252] In the remaining period, when the region is not affected by the monsoons, the Sahel is marked by prolonged periods of drought, which obviously influence the lives of millions of people, since it is almost impossible to work in the agricultural and pastoral sectors.

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[247] Population Reference Bureau, *Demographic Challenges of the Sahel,* PRB Resource Library, 2015. Available at: https://www.prb.org/resources/demographic-challenges-of-the-sahel/

[248] Deborah Goffner, Hanna Sinare and Line J. Gordon, *The Great Green Wall for the Sahara and the Sahel Initiative as an opportunity to enhance resilience in Sahelian landscapes and livelihoods*, Regional Environmental Change, 2019, p.1418

[249] Ibid.

[250] A. Nyong et al., *The value of indigenous knowledge in climate change mitigation and adaptation strategies*, cit., p.790

[251] Julia Kloos et al., *Climate change, Hydro Conflicts and Human Security*, cit., p.47

[252] Alessandra Giannini, Michela Biasutti, Michel Verstraete, *A climate model-based review of drought in the Sahel: Desertification, the re-greening and climate change*, Global and Planetary Change, No. 64, 2008, p.119

On top of these challenging situations, due to the high level of violence, conflict and political instability, which has historically characterised the region for centuries, the Sahel has been described by an important number of scholars as a poverty trap from which it is extremely difficult to escape.[253]

3.2. Climate Change and its Negative Consequences in the Sahel

As it has been occurring in other parts of the world, the Sahel has also been experiencing a high degree of variability in its climate conditions for at least a century. Yet, due to the region's different background – e.g. chronic levels of poverty, fast-growing population rate, political instability – the Sahel has been identified as 'ground zero' for climate change.[254] More specifically, it is possible to identify climate change in the exacerbation of three different phenomena: increasing average regional temperatures, increasing frequency as well as severity of droughts and, finally, decreasing rainfall patterns. Furthermore, for what concerns the Sahel, scholars emphasise that these environmental changes, which have been occurring for decades, can be particularly linked "to ocean and atmospheric dynamics such as the El Niño southern oscillation (ENSO) cycles, sea-surface temperatures caused by non-ENSO-related variations, large-scale of land degradation, land-atmosphere interactions and anthropogenic climate change".[255]

To begin with, in relation to what has been mentioned above, as noted by the IPCC, temperatures have continuously risen in the Sahel since the 1970s by approximately 0.2-2.0°C.[256] In addition, regional temperatures are expected to further increase between 3-6°C in the upcoming century,[257] thus having tragic effects on local populations, particularly in relation to food and water security. Moreover, as it has been recorded, precipitations declined dramatically in the XX century and have continued to do so in the first part of the XXI century.

[253] Deborah Goffner et al., *The Great Green Wall for the Sahara and the Sahel Initiative*, cit., p.1419
[254] Sara Vigil, *Climate Change and Migration: Insights from the Sahel* in Out of Africa: Why People Migrate, ISPI, 2017, p.53
[255] Julia Kloos et al., *Climate change, Hydro Conflicts and Human Security*, cit., p.48
[256] Terence Epule Epule et al., *Climate Change adaptation in the Sahel*, cit., p.121
[257] Deborah Goffner et al., *The Great Green Wall for the Sahara and the Sahel Initiative*, cit., p.1418

Indeed, despite more humid conditions in the mid-1990s, the regional climate has not returned to its previous rainfall levels of the mid-XX century (see figure 3.2.) and has increasingly become drier.[258] For instance, average annual precipitations in Sudan decreased from 425mm for the period 1941-1970 to 360mm for the period 1970-2000.[259]

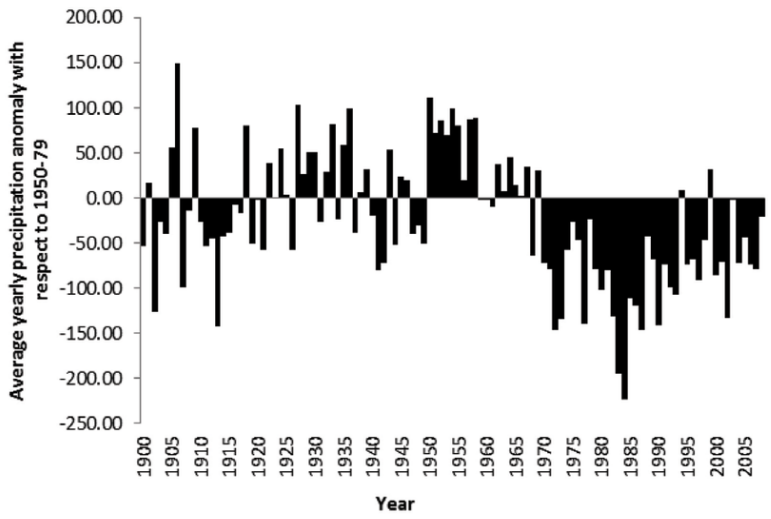

Figure 3.2. Years of above and below average rainfall in the Sahel region based on deviations from 1950 to 2008 mean, Research Gate, 2016

Over the decades, the impacts of rising temperatures and rainfall variations have contributed to strengthen the phenomenon of droughts in the Sahel. Despite droughts have surely characterised the region for centuries, it is possible to highlight that the frequency as well as the intensity of this phenomenon have escalated in the last century.[260] Indeed, as data shows, the region was hit by an incredible high number of severe droughts at the end of the XX and beginning of the XXI centuries – more specifically in 1967–73, 1981–83, 1986-87, 1991-92, 1993-94, 2004-2005 and 2010-2012 -, which led to dramatic consequences for the environment, local populations as well as numerous species of animals.[261] In this context, the 1970s, which were recorded as the worst period of drought in the history of the Sahel region, sadly contributed to the death of more than 100.000 people (and as much animals), who starved to death due to the lack of food and water resources.[262]

Environmental changes in the Sahel's climate conditions represent a serious threat for the survival of our species and the local flora and fauna. Therefore, as it has been emphasised several times throughout this thesis, local, national, regional and international institutions must seriously address all these issues and find a suitable solution for everyone (and everything), otherwise consequences will be tremendous, especially for humankind. In addition, it should

[258] Alessandra Giannini et al., *A climate model-based review of drought in the Sahel*, cit., p.119
[259] Julia Kloos et al., *Climate change, Hydro Conflicts and Human Security*, cit., p.48
[260] A. Nyong et al., *The value of indigenous knowledge in climate change mitigation and adaptation strategies*, cit., p.789
[261] Tamer Afifi, *Economic or Environmental Migration?*, cit., p.101
[262] Ibid.

not be forgotten that climate change will not only affect climate conditions, but it will also boost the occurrence of numerous diseases in the African region, which can result fatal for people living in a fragile and vulnerable environment such as the Sahel.[263]

3.2.1. Climate Change and its Negative Consequences in the Sahel: Lake Chad, the Niger River and the Senegal River

As mentioned earlier, the Sahel region is considered extremely vulnerable to environmental changes. Negative consequences deriving from changes in climate conditions, however, are not threats that are only projected in the future; on the contrary, Sahelian populations have witnessed to drastic changes in the local environment since at least the 1970s, which have surely affected the lives of many people.

For example, Lake Chad, once representing one of the largest freshwater basins in the whole continent and providing water as well as nourishment to a great number of humans and animals of the Sahel, represents today the emblem of the effects of climate change in the region. Located on the edge of the Sahara Desert, with an area of almost 25.000 km2 in the good times, the lake used to be shared by four countries: Cameroon, Chad, Niger and Nigeria.[264] Despite latest [little] improvements in water levels, due to frequent, severe periods of drought as well as a mismanagement of water resources, mainly caused by modern irrigation systems, Lake Chad has shrunk by around 90% since the 1960s and no longer exists in Nigeria (see figure 3.3).[265] Yet, even though the scarcity of water and food represents a serious threat to local populations which must be surely addressed by local, national and international institutions, unfortunately, this may not be the only. Indeed, as scholars highlight, due to decreasing levels of the lake's water, the area has witnessed to increasing levels of violence over access to resources as well as the acquisition of emerging islands. For sure the ongoing crisis has deeper

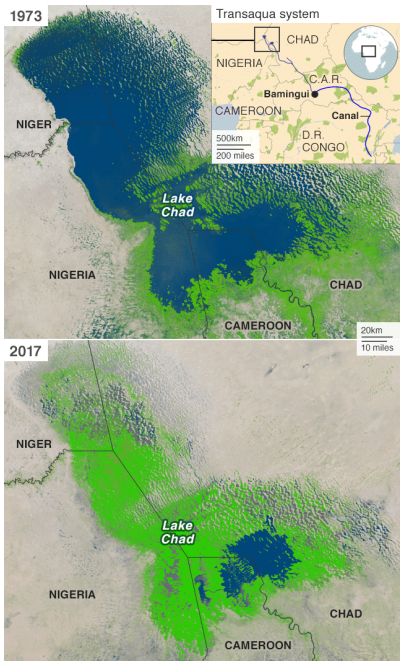

Figure 3.3. Shrinking of Lake Chad, Will Ross, BBC, 2018

[263] Terence Epule Epule et al., *Climate Change adaptation in the Sahel*, cit., p.121
[264] Tamer Afifi, *Economic or Environmental Migration?*, cit., p.101
[265] The European Space Agency, *Lake Chad's shrinking waters*, ESA, 2019. Available at: https://www.esa.int/ESA_Multimedia/Images/2019/03/Lake_Chad_s_shrinking_waters

roots – say inequality, poverty, marginalisation -, however, in this context, climate change is acting as a threat multiplier, exacerbating existing issues in an already fragile environment.[266]

Another concrete example of how climate change is affecting the Sahel region and its populations is represented by the situation of the Niger river and its delta. With a length of 4200 kilometres, the Niger river is the principal watercourse in western Africa and the third longest river in the whole continent, boosting, among others, the second largest delta in the world.[267] Especially the Niger delta, a territory that has provided natural resources to local farmers, fishers and pastoralists for centuries, has been dealing with tremendous environmental changes since the 1970s, including coastal erosion, floods, seal-level rise, and saltwater intrusion.[268] Furthermore, due to changing rainfall patterns, farmers are constantly faced with the risk of losing their crops, thus leading to frequent food shortages in the area.[269] In addition, the decreasing flow capacity of the river, due to both climate change and the construction a hydropower dam, is increasing social tensions, especially between farmers and herders, who now occupy the same area for their activities.[270] In reality, climate change is not the only factor worsening the situation in relation to the Niger river and its delta. On the contrary, there are other environmental issues, which are instead directly linked to human activities in the Sahel, including high levels of water pollution (which harms the local ecosystem) and decreasing flow capacity of the river due to water mismanagement (which leads to water shortages, decreasing levels of farmland, social tensions, etc.).[271]

Finally, the last example displayed in this chapter regards the Senegal River, which, located in West Africa, provides water to an important number of people in the semi-arid territories of Senegal, Mauritania and Mali. Despite numerous efforts made by local and national authorities to better manage water resources - Mali, Senegal and Mauritania formed in 1972 the Senegal River Basin Development Authority (commonly known as OMVS) - since the 1970s, the availability of freshwater drastically diminished due to the occurrence of an increasing number

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[266] Bihn Pham-Duc, Florence Sylvestre, Fabrice Papa, Frédéric Frappart, Camille Bouchez and Jean-Francois Crétauz, *The Lake Chad hydrology under current climate change*, Scientific Reports – Nature Research, 2020, p.2

[267] Akinlawon Ladipo Mabogunje, *Niger River*, Britannica, accessed on 14/12/2021. Available at: https://www.britannica.com/place/Niger-River

[268] Andrew Onwuemele, *Livelihood Responses to Climate Change in the Niger-Delta: Implications for Food Security in Nigeria*, Nigerian Institute of Social and Economic Research (NISER), 2015, p.126

[269] Etiosa Uyigue, *The Changing Climate and the Niger Delta*, Community Research and Development Centre (CREDC), 2009, p.1

[270] Tor Benjaminsen, Koffi Alinon, Halvard Buhaug and Jill Tove Buseth, *Does climate change drive land-use conflicts in the Sahel?*, Journal of Peace Research, No. 49, 2012, p.100

[271] Tamer Afifi, *Economic or Environmental Migration?*, cit., p.103

of severe droughts.[272] As it occurred in the two previously-mentioned cases, in the Senegal river valley, the reduction of water availability affected communities enormously, leading to water shortages as well as a constant risk of food deficit, especially considering that the agricultural and pastoral sectors rely on these waters.[273]

3.3. The Climate Change-Migration Nexus in the African Sahel

Migration has always characterised African populations' lives, who have been using this phenomenon in different ways as well as for different purposes. Migration can be seen as an important strategy in the labour market and in livelihood security across the whole continent, since it can result extremely helpful in times of hardship - e.g. it is a method used by the majority of African households to diversify their sources of income.[274] Furthermore, although migration can occur both at the internal and at the international levels, most migrants are likely to decide to stay in their countries of nationality due to a number of different reasons - including lack of resources, anti-immigration strict policies, cultural and linguistic differences. Nonetheless, when African migration is undertaken at the international level, despite what the political discourse, the public opinion and the media in developed Western countries have been continuously claiming, it will be mainly directed towards neighbouring countries rather than overseas.[275] Interestingly enough, this is also confirmed by numerous studies, which emphasise that the number of African countries hosting more than two million migrants - thus people with a nationality different from the country they are residing in - is extremely high, especially in Sub-Saharan African countries (e.g. South Sudan, Sudan, the Democratic Republic of Congo, Somalia and Nigeria).[276] In addition, when analysing the phenomenon of migration from the African continent, too often, the political discourse as well as the public opinion of developed countries assume that these flights are one-way journeys only. Yet, this idea is based on wrong assumptions, since the number of returnees in the country of origin is not insignificant. Surely, in order to return, the situation in a given country should not be deteriorating and specific conditions must be guaranteed to these people (e.g. peace and stability, improvement in living standards, implementation of adaptation and mitigation strategies in relation to climate

[272] Michelle Langrand, *Cooperating over shared water in West Africa*, Geneva Solutions, 2021. Available at: https://genevasolutions.news/explorations/the-water-we-share/cooperating-over-shared-water-in-west-africa
[273] Jürgen Scheffran, Elina Marmer and Papa Sow, *Migration as a contribution to resilience and innovation in climate adaptation*, cit., p.4
[274] Richard Black, *Environmental refugees*, cit., p.1
[275] Marie-Laurence Flahaux, *Demystifying African Migration: Trends, Destinations and Returns* in Out of Africa: Why People Migrate, ISPI, 2017, p.36
[276] Giovanni Carbone and Paolo Magri, *Out of Africa: Why People Migrate*, ISPI, 2017, p.7

change), however, this has always represented a viable option for African emigrants, which is too often disregarded.[277]

For what concerns the climate change-migration nexus in the African context, despite latest improvements, research is still scarce.[278] Nonetheless, this should not imply that environmental-related migrations do not occur in these countries; on the contrary, this phenomenon is an already solid reality, which has been affecting millions of people for decades. Once again, despite what the public opinion may believe, especially in Europe, an African mass exodus (or African invasion) due to environmental changes is far from being the truth and will not happen any time soon.[279] Differently, since the end of the XX century, the percentage of African migrants undertaking an international flight has tended to decrease. It is true that the total number of migrants rose from 21.6 million in 2000 to 32.6 million in 2015, however, at the same time, one should also consider the increasing number of population levels in these countries.[280] Therefore, as displayed in figure 3.4., despite the small-scale increase of the last decade, probably also sparked by the Arab Spring and recent worsening of climate conditions, levels of emigration in Africa has been stable since the 1990s.

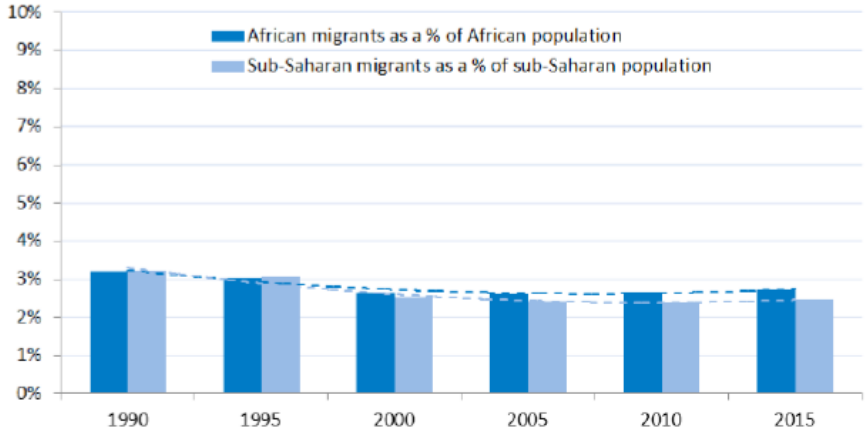

Figure 3.4. African migrants as a percentage of the population in Africa, UN Department of Economic and Social Affairs and UN Population Division, Marie-Laurence Flahaux, Demystifying African Migration, 2017

As reflected in the broader African context, for centuries, human migration has represented an important and extremely resourceful activity undertaken also by Sahelian populations, who have continuously fled their territories of origin for different reasons, among others, to increase their livelihood and strengthen their social resilience. Furthermore, following the same logic of what mentioned in the previous paragraphs, unlike common belief, rather than long-distance,

[277] Marie-Laurence Flahaux, *Demystifying African Migration*, cit., p.42
[278] Susanne Melde et al, *Making Mobility Work for Adaptation to Environmental Changes*, cit., p.26
[279] Marie-Laurence Flahaux, *Demystifying African Migration*, cit., p.31
[280] Ibid., p.34

permanent migrations, Sahelian populations have always tended to move short-distance and following a circular pattern – the so-called circular migration, which according to the International Organisation for Migration is "a form of migration in which people repeatedly move back and forth between two or more countries".[281] As highlighted in numerous studies, however, due to causative factors in the Sahelian migration process, the analysis of the phenomenon has not always been simple in the region, also considering that findings on the nature and volume of migration drivers often resulted contradictory.[282] Nonetheless, as emphasised by Neumann and Hermans, such findings should not be surprising since Sahelian countries and their populations are extremely different one with the other - for instance, climate conditions highly influence the different Sahelian population's ways of living (i.e. while in northern areas populations tend to be nomadic pastoralists, they are more sedentary agriculturalists in the south).[283]

Furthermore, in the Sahel, as in virtually all other regions of the world, drivers of migrations are rarely given by one single factor; on the contrary, extremely variegated elements – say economic, social, and environmental reasons - intersect and strengthen one with the other. Migration is here led by economic and social reasons (e.g. search for employment, political instability, conflicts, poverty), however, environmental factors surely play a crucial role in the Sahel. For centuries, the region's climate variability has represented a driver in migration flows, forcing people to move in order to adapt to rainfall's seasonality and periods of drought (see figure 3.5.).[284] Yet, at least in the last 50 years, climate conditions have been exacerbating due to environmental changes, destroying an equilibrium which has lasted for centuries. Just to provide an example, between the 1960s and the 1980s, studies found out that severe droughts caused large-scale displacement among Sahelian peoples, compelling them to

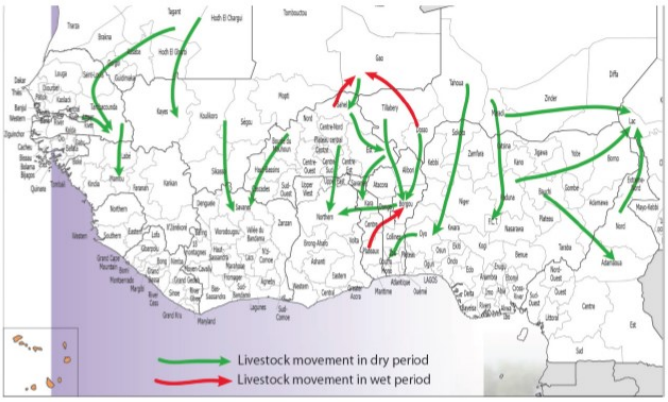

Figure 3.5. Cross-border transhumance routes in the Sahel and West Africa, SWAC and OECD, Livestock in the Sahel and West Africa, Policy Note 3, 2007

[281] Alice Sironi, Céline Bauloz and Milen Emmanuel, *Glossary on Migration*, International Organization for Migration, No.34, 2019, p.29
[282] Kathleen Neumann and Frans Hermans, What Drives Human Migration in Sahelian Countries? A Meta-analysis, Population, Space and Place, 2017, p.1
[283] Ibid., p.2
[284] Sara Vigil, *Climate Change and Migration*, cit., p.56

move internally (i.e. within state's borders) or towards neighbouring countries in search of wetter areas that provided safer as well as healthier living conditions.[285] In this case, migration allowed both farmers and herders to cope with the impacts of climate change, thus finding a solution which granted them the possibility to temporary secure some sort of livelihood for them and their families – in other words to have something to eat on the table.

Extremely hot weather, decreasing precipitations and lack of water represent only some of the factors that have forced people to flee in search of livelihoods security in the Sahel. Indeed, as data highlights (see figure 3.6.), irregular rains and floods are continuously impacting households in the African region.[286] According to the Global Internal Displacement Database, between 2008 and 2020, 334 disaster events were reported, forcing approximately 16 million people to flee across 13 different countries in the region – including, among the most important, Nigeria, Niger, Mali, Sudan, and Chad.[287]

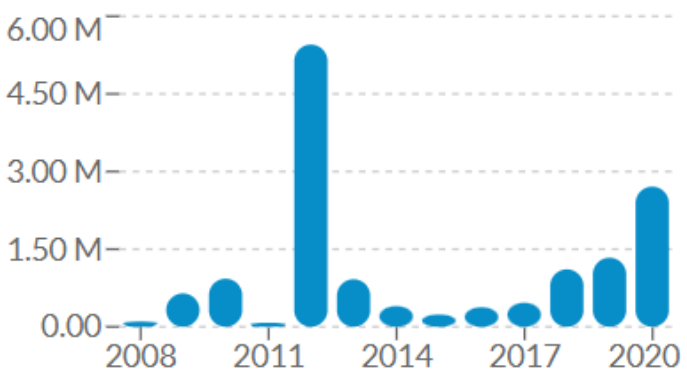

Figure 3.6. New flood and storm displacements from 2008 to 2020, Global Internal Displacement Database, IDMC, 2021

Furthermore, while sudden-onset disasters surely represent the most visible impacts of climate change on migration flows, it should not be forgotten that slow-onset events tremendously affect local populations' movements as well.[288] Indeed, these events, although occurring in longer periods of time, similarly impact local populations, since they can amplify and further exacerbate economic and social conditions in already fragile environments.[289] This is exactly what is happening in different areas of the Sahel, where sea-level rise, salinisation, land degradation, desertification and loss of biodiversity, among others, are provoking food and water shortages, leaving people with no means of subsistence and no other choice but flee.

[285] Margit Ammer et al., *Time to Act*, cit., p.12
[286] Food and Agriculture Organization of the United Nations, *The Linkages between Migration, Agriculture, Food Security and Rural Development*, cit., p.35
[287] Internal Displacement Monitoring Centre, *Global Internal Displacement Database,* IDMC website, accessed on 19/12/2021. Available at: https://www.internal-displacement.org/database/displacement-data
[288] Sara Vigil, *Climate Change and Migration*, cit., p.61
[289] Ibid.

3.5. Adaptation and Mitigation to Climate Change: Strengthening Resilience in the Sahel

People not fleeing the Sahel in search of better living and working conditions due to their inability or unwillingness to resettle have been obliged to find new adaptation and mitigation strategies in order to cope with climate change and its negative consequences. Local populations (i.e. farmers, herders, fishers, etc.) as well as local and national authorities cannot address the issue(s) alone; in contrast, they necessitate all the support they can get – both economically and logistically. This is why external stakeholders – including the United Nations and its Environment Programme, the World Bank, the African Development Bank, nongovernmental organisations, donors, the scientific community – have not been passive and have continuously intervened to strengthen resilience in these areas since at least the 1970s.[290] According to the IPCC, resilience represents

"[t]he ability of a system and its component parts to anticipate, absorb, accommodate, or recover from the effects of a hazardous event in a timely and efficient manner, including through ensuring the preservation, restoration, or improvement of its essential basic structures, identity and functions, while also maintaining the capacity for adaptation, learning and transformation".[291]

It is true that Sahelian populations represent some of the most vulnerable peoples on earth, however, strategies to mitigate and/or adapt to climate change are not exactly something new in the region. Indeed, although the Sahel is one of the most inhospitable territories in the whole world, Sahelians populations have been able to coexist with extremely harsh climate conditions for centuries (e.g. frequent droughts, hot temperatures, low rainfall levels, low percentage of arable soils), developing important mechanisms, strategies and knowledge to combat the climate and its negative effects.[292] It would result, therefore, fundamental and extremely beneficial to incorporate traditional indigenous knowledge into mitigation and adaptation policies, not only because they are cost-effective and sustainable, but also because they would boost the participation of local populations in the decision-making process.[293] Yet, despite latest, little improvements to reverse this trend, much more should be done, leaving local populations, at the moment, disregarded and marginalised in decisions that directly involve them.

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[290] Terence Epule Epule et al., *Climate Change adaptation in the Sahel*, cit., p.122
[291] IPCC, *Glossary of terms in Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation* - A Special Report of Working Groups I and II of the Intergovernmental Panel on Climate Change, Cambridge University Press, 2012, p. 563
[292] A. Nyong et al., *The value of indigenous knowledge in climate change mitigation and adaptation strategies*, cit., p.788
[293] Ibid.

Examples of mitigation and adaptation actions are numerous and have been used in different sectors since the 1970s by the stakeholders involved. These range from water management to the plantation of trees, and from the development of irrigation systems to the creation of new jobs in order to provide families the possibility to diversify their incomes in times of hardship. For example, it can be introduced the United Nations Reductions of Emissions from Deforestation and Forest Degradations (REDD+), a programme which provides financial incentives to local farmers for planting trees, and the African Climate Change Fund, which, established under the United Nations Framework Convention on Climate Change, aims at increasing access of African countries to international climate finance.[294] Yet, among these, the most recent and probably the most important and ambitious plan to combat climate change in the region is the Great Green Wall, a multibillion-dollar reforestation effort to halt land degradation in the Sahel.[295]

3.5.1. The Great Green Wall Initiative

The idea of using trees to halt land degradation and combat environmental changes in the Sahel is not something new; in contrast, this concept was already developed in the 1960s, even before desertification was acknowledged as a potential threat at the international level by major leaders of the world at the United Nations Conference on Desertification.[296] In this period, some Sahelian countries – for instance, Niger in 1965, Algeria in 1971 and Mauritania in 1975 - embraced the idea of creating 'belts' or 'dams' of trees in order to reforest degraded areas, thus creating enormous benefits for local ecosystems as well as for local populations. These latest achievements on the matter led Thomas Sankara, Burkina Faso's Marxist president from 1983 to 1987, to theorise the development of an ambitious plan of creating a 'wall' of trees to stop desertification, combat climate change and restore degraded areas in the Sahel region: it was the birth of the Great Green Wall (GGW) Initiative.[297]

The initial enthusiasm behind the creation of the project, however, diminished over the years, especially after Sankara's assassination, leading to a consequent failure of the initiative's implementation. Only in 2005, at the 7th summit of the leaders and Heads of State of the Community of Sahel-Saharan States, former Nigerian president, Olusegun Obasanjo, and former Senegalese President, Abdoulaye Wade, highlighted once again the importance for

[294] Terence Epule Epule et al., *Climate Change adaptation in the Sahel*, cit., p.122
[295] Deborah Goffner et al., *The Great Green Wall for the Sahara and the Sahel Initiative*, cit., p.1417
[296] The Great Green Wall website, *The Great Green Wall*, cit.
[297] Deborah Goffner et al., *The Great Green Wall for the Sahara and the Sahel Initiative*, cit., p.1420

Sahelian states to complete the GGW mission, which was only launched two years later.[298] Endorsed by eleven countries of the African Union in 2007 (Burkina Faso, Chad, Djibouti, Eritrea, Ethiopia, Mali, Mauritania, Niger, Nigeria, Senegal, and Sudan), the initiative currently counts more than 20 members (see figure 3.7.) and is supported by an important number of international organisations, including the European Union, the UN Food and Agriculture Organisation and the Global Mechanism of the UNCCD. Today, as the official website reads, the Great Green Wall is "an African-led movement with an epic ambition to grow an 8.000-kilometre natural wonder of the world across the entire width of Africa".[299] Furthermore, not only will the project create a mosaic of greener and more productive landscapes in the Sahel, but it will also serve to improve local populations' living standards by eradicating poverty, combating food insecurity and diversifying their sources of income.[300] Indeed, for African Union leaders, the Great Green Wall, together with other similar initiatives, "reflects an ambitious, long-term policy vision about a green, fertile and prosperous Africa, rid of famine and images of malnourished children and livestock".[301]

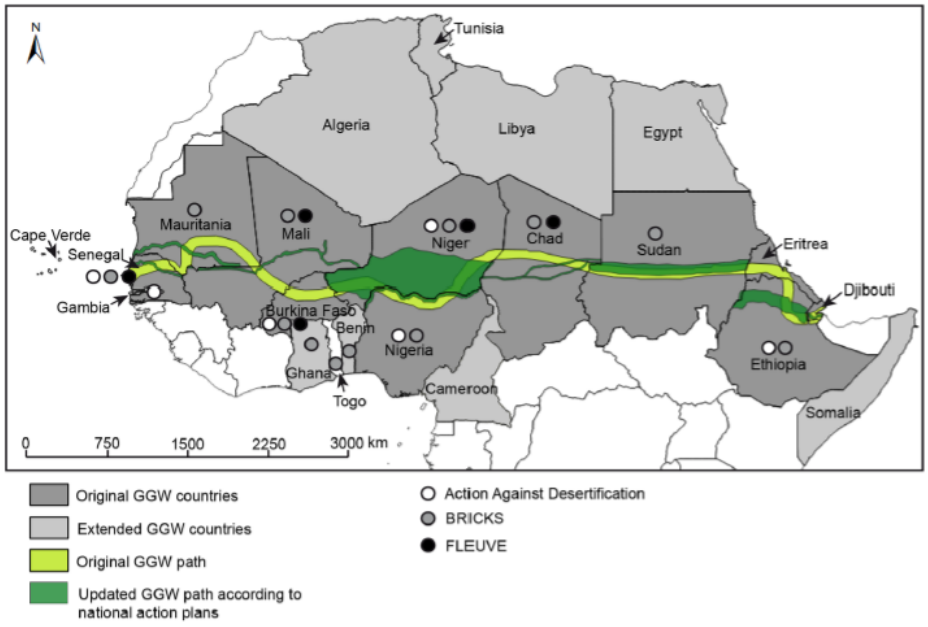


Figure 3.7. The Great Green Wall, Deborah Goffner, The Great Green Wall for the Sahara and the Sahel Initiative as an opportunity to enhance resilience in Sahelian landscapes and livelihoods, 2019

Yet, the fulfilment of the initial GGW initiative proved to be extremely problematic and almost unrealistic. Indeed, besides the fact that little fundings were allocated to the project, scholars

[298] Ibid.
[299] The Great Green Wall website, *The Great Green Wall*, accessed on 17/12/2021. Available at: https://www.greatgreenwall.org/about-great-green-wall
[300] Nora Berrahmouni, François Tapsoba and Charles Jacques Berte, *The Great Green Wall for the Sahara and the Sahel Initiative: building resilient landscapes in African drylands*, Forest Assessment, 2016, p.1
[301] Deborah Goffner et al., *The Great Green Wall for the Sahara and the Sahel Initiative*, cit., p.1422

emphasised how planting trees in such an inhospitable and uninhabited land had no chance to succeed, thus leading to the death of more than 80% of planted trees.[302] This initial failure led all the stakeholders involved – i.e. local and national authorities, international organisations, nongovernmental organisations, the scientific community - to reconsider the ongoing project and to rethink all the methods and the objectives that were previously followed. This dangerous misstep slowly changed the way the Great Green Wall Initiative was conceived, centring its primary focus on indigenous land use techniques as well as on the sustainability of the project rather than erecting a wall of trees on the edge of the desert to halt desertification.[303] It resulted the development of a new, ambitious plan, which is primarily founded on the creation of a mosaic of diverse, landscape-scale actions and production systems (e.g. forests, agroforestry, croplands, etc.), aiming at improving long-term environmental and socio-economic conditions and representing a potential game-changer in the whole Sahel region.[304]

[302] Jim Morrison, *The Great Green Wall Didn't Stop Desertification, but it Evolved Into Something That Might*, Smithsonian Magazine, 2016. Available at: https://www.smithsonianmag.com/science-nature/great-green-wall-stop-desertification-not-so-much-180960171/
[303] Ibid.
[304] Deborah Goffner et al., *The Great Green Wall for the Sahara and the Sahel Initiative*, cit., p.1421

4. Chapter Four: Focus Latin America and the Caribbean

Climate change represents one of the most daunting problems our society will have to face in the XXI century. Not only will this phenomenon alter climatic conditions across different regions of the world, but it will also affect what had been previously achieved by the international community in terms of economic and social development. Yet, as previously emphasised, climate change will not impact countries and populations of the world with the same frequency as well as with the same intensity; on the contrary, this phenomenon is likely to affect some nations, peoples and shares of populations more than others.

Due to a number of different reasons, including chronic levels of poverty, lack of necessary resources as well as inappropriate means of adaptation, the negative effects of climate change will be mostly felt among the poorest shares of the population in the poorest areas across the Global South. These however represent peoples and countries which are not even particularly responsible for the exacerbation of the planet's climate conditions, since they do not contribute to the emission of greenhouse gases in the atmosphere and, therefore, do not contribute to the increase of average global temperatures. Despite enjoying averagely higher levels of development compared to the African continent (e.g. stronger economies, bigger industries, better infrastructures), Latin American and Caribbean countries modestly contribute to the emissions of GHGs in the atmosphere. As highlighted by researchers of the World Bank, emissions in the region are estimated to be approximately 10% of global GHG emissions, an incredibly low number considering that Brazil and Mexico alone are responsible for ¼ (approximately 2.66%) of the total GHG emissions in the region.[305]

Furthermore, as previously mentioned, climate change is particularly catastrophic in these areas also because local populations and national authorities do not possess the necessary resources to deal with this phenomenon and adapt to its negative consequences. Indeed, similarly to what has been highlighted in the previous chapter, peoples and countries in the LAC region are also faced with relatively high levels of poverty, making the region particularly vulnerable to climate conditions. It is true that poverty and inequality are not evenly distributed across Latin America and the Caribbean, however, despite latest improvements, it should not be forgotten that 17% of the total population (approximately 100 million people) is poor, and 8%

[305] Anna Wellenstein and Valerie Hickey, *10 key points on climate change impacts, opportunities and priorities for Latin America and the Caribbean*, World Bank Blogs, 2021. Available at: https://blogs.worldbank.org/latinamerica/10-key-points-climate-change-impacts-opportunities-and-priorities-latin-america-and

(approximately 45 million people) still live in extreme poverty conditions according to UN standards.[306] The nexus between poverty and climate change is paramount in this context and should not be underestimated, especially because climate variability can contribute to the erosion of important livelihood assets – natural, physical, financial, human, social -, thus having tremendous impacts on the poorest shares of the population who extremely rely on them.[307] For example, climate hazards in the Global South can lead to the loss of land, working equipment and livestock, all elements that are fundamental for the survival of an incredibly high number of people, since they provide both food and financial resources for the sustenance of entire households.

Moreover, scholars have increasingly linked the exacerbation of climate conditions with the worsening of human health, especially in those countries of the Global South that are clearly bad equipped and not prepared for the upcoming impacts. This is also the case of numerous Latin American and Caribbean countries, which have witnessed an increase of different diseases in the last few decades, among others malaria, that have proved to be extremely fatal especially in numerous countries of the region.[308] In addition, the exacerbation of human health in Latin America and the Caribbean can also be associated with the growing levels of population, which can seriously pose heavy burdens on the availability of natural resources (e.g. food and water), leading to the escalation of several dangerous issues such as malnutrition and undernutrition.[309]

Yet, how is the regional climate projected to change in the future? And what are the consequences one should expect for local environments as well as local populations in Latin America and the Caribbean? Although answering these questions may appear easy and straightforward, in reality, it results much more complicated than one could expect. It is true that scientists agree upon the existence of climate change and the threat it poses on humankind, however, due to the complexity of the phenomenon as well as the uncertainty of humans' future

[306] Tine Rossing and Olivier Rubin, *Climate Change, Disaster Hot Spots and Asset Erosion* in Reducing Poverty, Protecting Livelihoods and Building Assets in a Changing Climate – Social Implications of Climate Change in Latin America and the Caribbean, the World Bank, 2010, p.75
[307] Dorte Verner, *Reducing Poverty, Protecting Livelihoods and Building Assets* in a Changing Climate – Social Implications of Climate Change in Latin America and the Caribbean, the World Bank, 2010, p.8
[308] Lykke Andersen, John Grey, Claus Poertner and Dorte Verner, *Human Health and Climate Change* in a Changing Climate – Social Implications of Climate Change in Latin America and the Caribbean, the World Bank, 2010, p.167
[309] Sara Trab Nielsen, *Coastal Livelihoods and Climate Change* in Reducing Poverty, Protecting Livelihoods and Building Assets in a Changing Climate – Social Implications of Climate Change in Latin America and the Caribbean, the World Bank, 2010, p.125

coping capacities, precise projections and accurate estimates cannot be made. In any case, as scientists state, climate variability will likely impact local populations and local environments through the changing conditions of three different phenomena: temperatures, precipitation patterns and, finally, frequency and intensity of extreme natural events. Despite these changes can also be observed in the African continent, impacts and consequences in Latin America and the Caribbean greatly vary.

As regards the first phenomenon, scientists highlight that increasing average temperatures will characterise the LAC region throughout the XXI century. The IPCC developed a series of different scenarios, predicting an increase in average temperatures between 1 and 6°C by 2100, with the greatest increase occurring in the tropical areas of South America.[310] This phenomenon will have serious repercussions in these countries since it will influence the frequency as well as the intensity of heatwaves, it will shorten cold seasons and it will boost the escalation of extreme natural hazards (e.g. hurricanes).[311] In addition, increasing temperatures will foster the melting of glaciers, especially in the Andes, thus leading to the occurrence of floods and landslides in the short period while stressing the availability of water in the long run.[312]

Secondly, climate change will alter rainfall patterns in Latin America and Caribbean countries, with dry areas experiencing a more arid climate while wet areas witnessing a further increase of precipitations.[313] Although increasing rainfalls can have severe repercussions on the affected areas, including floods, landslides and spread of diseases, the scientific community has rather focused on the consequences deriving from decreasing precipitation patters. Indeed, this phenomenon, which is expected to exacerbate in Central

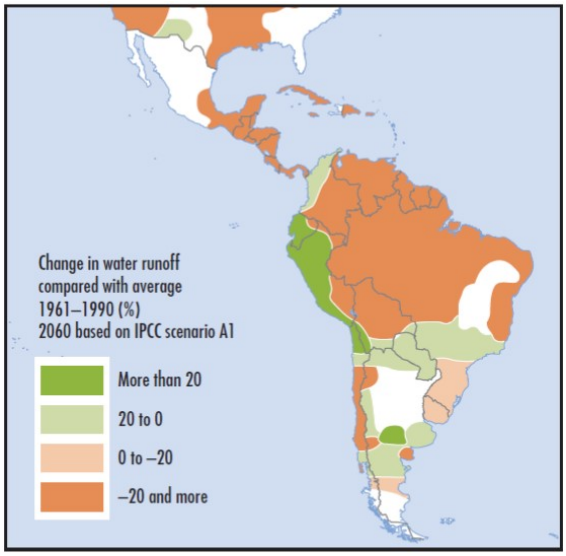


Figure 4.1. Changes in water runoff for the LAC region by 2050 due to climate change, Dorte Verner, Reducing Poverty, Protecting Livelihoods and Building Assets in a Changing Climate, 2010

[310] Raoul Kaenzig and Etienne Piguet, *Migration and Climate Change in Latin America and the Caribbean* in People on the Move in a Changing Climate: The Regional Impact of Environmental Change on Migration, Vol. 2, 2014, p.3
[311] Dorte Verner, *Reducing Poverty, Protecting Livelihoods and Building Assets*, cit., p.9
[312] Tine Rossing, *Water Scarcity, Climate Change and the Poor* in Reducing Poverty, Protecting Livelihoods and Building Assets in a Changing Climate – Social Implications of Climate Change in Latin America and the Caribbean, the World Bank, 2010, p.38
[313] Christopher Reyer et al., *Climate change impacts in Latin America and the Caribbean and their implications for development*, International Bank for Reconstruction and Development/ The World Bank, 2015, p.4

America and in South America near the Caribbean coast (see figure 4.1.), will affect local populations and the local environment with severe droughts and forest fires. Furthermore, the agricultural sector will also not be exempt from the effects caused by rainfall variability, since rural poor populations (approximately 63% of the total rural population in the region), due to the inability to invest in irrigation systems, greatly depend on rainfall patterns for their production and, as such, for their survival.[314]

Finally, the last element that must be introduced in relation to the changing climate in Latin America and the Caribbean is related to the increase of severe climate hazards, including hurricanes, tropical typhons, storms and floods. As evidence shows, although these extreme weather events have already become the norm in the LAC region (see figure 4.2.), they will intensify even more in the future, causing further deaths and destruction to properties, infrastructures and natural resources.[315]

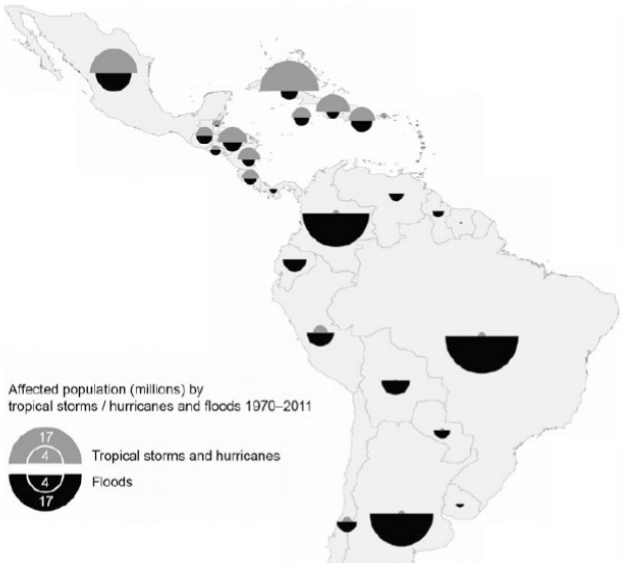


Figure 4.2 Map of the population (in millions) affected by natural hazards, Raoul Kaenzig and Etienne Piguet, Migration and Climate Change in Latin America and the Caribbean, 2014

Similarly to the previous chapter, this section also deepens the numerous challenges that climate change is (and will be) posing on the Latin America and the Caribbean region. Particularly, the chapter centres its core on the territories washed by the Caribbean Sea, the so-called Wider Caribbean Region (WCR), one of the regions of the world most affected by climate hazards. Furthermore, at a later stage, the chapter will also consider the repercussions of climate change on migration flows. Indeed, there is no doubt that the negative consequences of climate variability are exacerbating the local environment and are affecting the lives of millions of people every year, leaving them with no other choice but migrate in search of a better and safer life.

[314] Tine Rossing, *Water Scarcity, Climate Change and the Poor*, cit., p.28
[315] Dorte Verner, *Reducing Poverty, Protecting Livelihoods and Building Assets*, cit., p.9

4.1. The Wider Caribbean Region

The Wider Caribbean region is a territory located between the North American coast of Florida and the South American mainland, which occupies an area of approximately 5.3 million square kilometres on the Caribbean Sea and the Gulf of Mexico (see figure 4.3.). The region comprises a total of 30 island and continental states as well as 16 French, British, American and Dutch overseas territories, boosting in addition an incredibly high number of small islands, atolls, and cays (ca. 700).[316] The region offers a maritime tropical climate, which is characterised by an ample seasonal rainfall variability, with dry seasons ranging from December to March/April and wet periods stretching between June and November.[317] Furthermore, due to the different climate conditions and the particular morphology of the territory, the WCR offers a great variety of flora and fauna, making the Caribbean one of the world's biodiversity hotspots.[318]

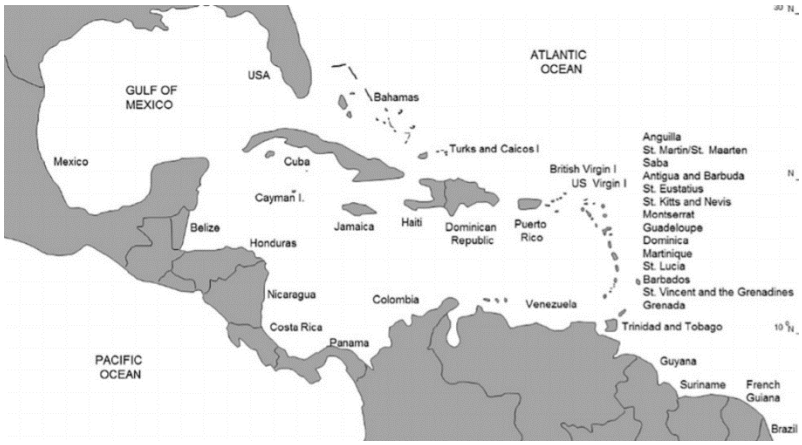


Figure 4.3. The Wider Caribbean Region, Lucia Fanning et al., Challenges to Implementing Regional Ocean Governance in the Wider Caribbean Region, 2021

Territories as well as populations of the Wider Caribbean region, as easily understandable, are therefore extremely dependent on natural resources supplied by local marine and costal ecosystems, generating important revenues for countries and providing important sources of subsistence – if not the only – to families and individuals through tourism, coastal protection activities and fisheries.[319] For example, as data shows, the tourism sector alone, which accounts for more than 18% of the total GDP of countries in the region, generated annual revenues of

[316] Regional Activity Center for Specially Protected Areas and Wildlife of the Caribbean (RAC-SPAW), *The Wider Caaribbean Region*, RAC-SPAW official website, accessed on 29/12/2021. Available at: https://www.car-spaw-rac.org/?The-Wider-Caribbean-Region-768

[317] Adrian Cashman, Leonard Nurse, and Charley John, *Climate Change in the Caribbean: The Water Management Implications*, The Journal of Environment & Development, No. 19, 2010, p.45

[318] United Nations Environment Programme, *Caribbean Environment Programme*, UNEP, accessed on 29/12/2021. Available at: https://www.unep.org/explore-topics/oceans-seas/what-we-do/working-regional-seas/regional-seas-programmes/wider?_ga=2.206181395.1055725277.1619684984-2041677393.1612174695

[319] Michael Taylor, Tannecia Stephenson, Anthony Chen and Kimberly Stephenson, *Climate Change and the Caribbean: Review and Response,* Caribbean Studies, Vol.40, No.2, 2012, p.172

US$ 90.5 billion in the period 2004-2013.[320] Yet, climate change and its negative consequences (i.e. sea level rise, droughts, hurricanes, etc.) have been lately disrupting a balance between humankind and the environment, which has instead persisted for centuries, thus creating various dangerous issues among national authorities, institutions and local populations.

This is especially the case of 25 Caribbean countries and overseas territories, representing part of the so-called Small Island Developing States (SIDS) group, a set of nations that are increasingly experiencing the negative repercussions of climate change – including sea level rise, increasing frequency and intensity of extreme natural hazards, decreasing rainfall patterns and loss of biodiversity. These countries, sharing similar experiences as well as common issues – that is to say, countries located in small land masses, where local populations and infrastructures are concentred in low coastal areas, characterised by limited financial, technical and human resources, which are extremely vulnerable to economic shocks and extreme climatic events -, have decided to come together in order to cope with the effects of climate change and raise awareness of these issues at the global level.[321] Indeed, in 1990, they formed the Alliance of Small Island Developing States (AOSIS), an intergovernmental organisation aiming at "amplifying marginalised voices and [advocating] for these countries' interests, [thus helping them] in international climate change, sustainable development negotiations and processes".[322]

To conclude, it should not be forgotten that all Caribbean countries experienced a particular and troubled historical process, which has greatly influenced local communities in the region in the following centuries. As a matter of fact, after Columbus 'discovery' in 1492 and the consequent European invasion of the Americas, the region witnessed one of the saddest and cruel chapter of human history: the slave trade. This phenomenon is extremely crucial in this context, since it modified the racial, demographic and sociocultural perspectives of the region, having tremendous repercussions on these people for centuries and leading, among others, to inequality and injustice in comparison to white settlers.[323] Therefore, unlike in the African continent, especially when deepening the negative consequences of climate change and migration flows, it is possible to claim that, in the Caribbean region, race (or better, being

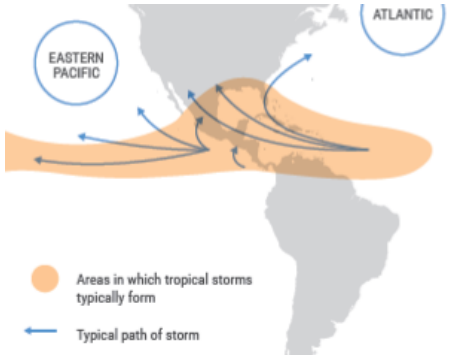
[320] United Nations Environment Programme, *Caribbean Environment Programme*, cit.
[321] Michelle Scobie, *Accountability in climate change governance and Caribbean SIDS*, Environment, Development and Sustainability, Vol.20, No.2, 2018, p.771
[322] Alliance of Small Island States, *About us*, Alliance of Small Island States official website, accessed on 30/12/2021. Available at: https://www.aosis.org/about/chair-of-aosis/
[323] Sidney Mintz, *The Caribbean Region – Slavery, Colonialism and Racism*, Daedalus, Vol.103, No.2, 1974, p.46

white) is an important factor to consider, since it can positively influence people's lives and their ability to migrate.

4.2. Climate Change and its Negative Consequences in the Wider Caribbean Region

Following global and regional trends, the Wider Caribbean region has been experiencing a high degree of variability in its climate conditions for at least a century. Climate change is leading to a constant increase of both seas and atmosphere's temperatures, thus provoking a consequent escalation in the frequency as well as in the intensity of extreme natural hazards – not only heavy storms, hurricanes, typhoons and cyclones, but also floods, landslides, droughts and heatwaves. However, although extreme weather events surely represent a dangerous peril for both local populations and the environment in the Caribbean, the region is not exempt from the threat of slow-onset events, including sea-level rise, decreasing rainfall patterns, ocean acidification, coastal erosion and salinisation.[324]

In the context of extreme natural hazards, the WCR has witnessed an increase in the occurrence of destructive hurricanes and tropical storms since the 1970s, making the region, with an annual average of 1053 storms, the second most 'disaster-prone' area in the whole world (see figure 4.4.).[325] Yet, the increase in the frequency as well as in the intensity of these phenomena should not be underestimated, since more frequent and intense storms could further exacerbate local populations' resilience due to shorter times of recovery and preparation.[326] Furthermore, although extreme natural hazards are highly disruptive in terms of human lives, economic development and biodiversity losses, they also have a direct impact on primary services, including education, health, sanitation as well as food and water security.



PERIOD 2000-2019	EASTERN NORTH PACIFIC	ATLANTIC	CROSS OVER*
Tropical Depression	48	33	-
Tropical Storm	151	148	-
Hurricanes	168	181	11
Hurricanes-Cat 5	10*	11	2

Figure 4.4. Tropical storms and hurricanes in the LAC region, OCHA, Natural Disasters in Latin America and the Caribbean 2000-2019, 2020

[324] Susanne Melde et al, *Making Mobility Work for Adaptation to Environmental Changes*, cit., p.22
[325] Tine Rossing and Olivier Rubin, *Climate Change, Disaster Hot Spots and Asset Erosion*, cit., p.64
[326] Office for the Coordination of Humanitarian Affairs, *Natural Disasters in Latin America and the Caribbean 2000-2019*, OCHA, 2020, p.5

Not only storms and torrential rains will characterise the Wider Caribbean region in the XXI century. Countries such as Guatemala, Nicaragua and Mexico, which are already suffering the consequences of harsh periods of droughts, will be further affected by this phenomenon, thus having negative repercussions on their economy as well as on their development.[327]

As regards slow-onset events, others will be the challenges that populations and national authorities will have to face in the region throughout the upcoming century. Freshwater shortages are surely one of the highest concerns for governments in Caribbean countries, especially in small island developing countries. Growing population, urbanisation, economic development as well as the escalation of tourism activities will pose a burden on water availability in all these countries. In addition, the situation will be further exacerbated by the occurrence of a combination of other climate-related phenomena, including increasing regional average temperatures, lengthening of seasonal dry periods and decreasing rainfall patterns.[328] Furthermore, sea-level rise, which, following global trends, is expected to incessantly continue during the XXI century, will represent another major threat for a great number of countries in the Wider Caribbean region. This dangerous phenomenon will undoubtedly lead to coastal erosion and salinity intrusion into coastal and groundwater aquifers, thus influencing water availability for local populations.[329] Yet, more in detail, if not properly addressed, sea level rise can lead in the worst-case scenario to the disappearance of entire states in low-lying areas, resulting consequently in a mass exodus from these countries.

It must be highlighted that these are only some of the numerous climate-related issues which have been (and will be) affecting the WCR in the time to come, however, they are surely not the only ones. Indeed, many others will be the challenges that national authorities and local populations will have to face in the XXI century in order to protect local environments and safeguard future generations.

4.2.1 Climate Change and its Negative Consequences in the Wider Caribbean Region: Hurricanes Harvey, Irma and Maria and the Loss of Coral Reefs

As mentioned earlier, climate change is leading to a major increase of temperatures - both in seas and atmosphere's levels - in the Wider Caribbean region, leading to the escalation of a

[327] Raoul Kaenzig and Etienne Piguet, *Migration and Climate Change in Latin America and the Caribbean*, cit., p.3
[328] Adrian Cashman, Leonard Nurse, and Charley John, *Climate Change in the Caribbean*, cit., p.43
[329] Ibid., p.52

great number of different natural hazards. This is also confirmed by the unprecedented strength of the 2017 hurricane season, one of the most active ever-recorded, which saw the succession of 17 named storms and several hurricanes, some of which exceptionally destructive.[330] Yet, above all, three category 5 hurricanes (i.e. the highest on the scale) occurred between the end of August and the beginning of September 2017 - Harvey, Irma and Maria (see figure 4.5.) -, leaving on their paths substantial damages (e.g. infrastructures, housing facilities, local activities) and hundreds of victims. Just to give a first insight of the terrible repercussions these catastrophic events had on the region as well as on the local populations, the UN Secretary-General, Antonio Guterres, claimed that the region, once a paradise, quickly turned into hell.[331]

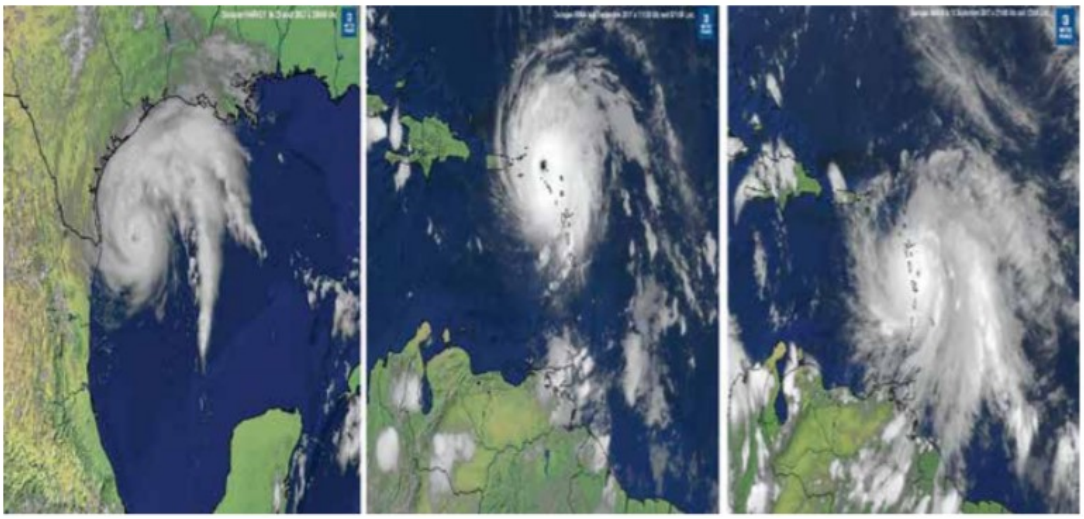


Figure 4.5. Hurricanes Harvey, Irma and Maria, World Meteorological Organization, Caribbean 2017 Hurricane Season, 2018

Given the size of these countries' economies, losses were monumental, reaching approximately a total worth of US$ 215bn – higher than the 2005 hurricane season, when Katrina, Rita and Wilma reached overall losses of US$ 170bn.[332] The sectors most affected were tourism and housing, however, other activities, including agriculture and fisheries, were not spared by the destructive force of these hurricanes. Livestock died, crops and productive trees were wiped away, boats were heavily damaged or completely destroyed, leaving lasting damages for the years to come.[333] In addition, as regards the tourism sector, the 2017 hurricane season did not influence only the affected countries but led to a decline in the sector in the whole Caribbean

[330] World Meteorological Organization, *Caribbean 2017 Hurricane Season – An evidence-based assessment of the early warning system,* WMO, 2018, p.13
[331] Zaimis Olmos, *In the eye of the Caribbean Storm: one year from Irma and Maria,* United Nations News, 2018, accessed on 30/12/2021. Available at: https://news.un.org/en/story/2018/09/1018372
[332] Eberhard Faust and Mark Bove, *The hurricane season 2017: a cluster of extreme storms*, Munich RE, 2017. Available at: https://www.munichre.com/topics-online/en/climate-change-and-natural-disasters/natural-disasters/storms/hurricane-season-2017.html
[333] United Nations Development Programme, *Regional Overview: Impact of Hurricanes Irma and Maria*, UNDP, 2017, p.5

region, thus further exacerbating an already fragile situation.[334] Overall, this led to catastrophic repercussions on the livelihoods of millions of people in several countries in the Caribbean, above all in Antigua and Barbuda, Anguilla, Sint Maarten, Dominica, Puerto Rico, Turks, Caicos and the Bahamas.

Another concrete example of the negative effects of climate change in the Wider Caribbean region is related to the disappearance as well as the bleaching of coral reefs from local ecosystems. According to scientists, due to climate change, pollution and other human-related activities (e.g. overfishing), "living coral cover in the Caribbean has decreased by 60% [between the 1970s and 2000s]".[335] Figures become even more dreadful in recent times, with percentage of losses up to 80% of total coral reefs (see figure 4.6.).[336]

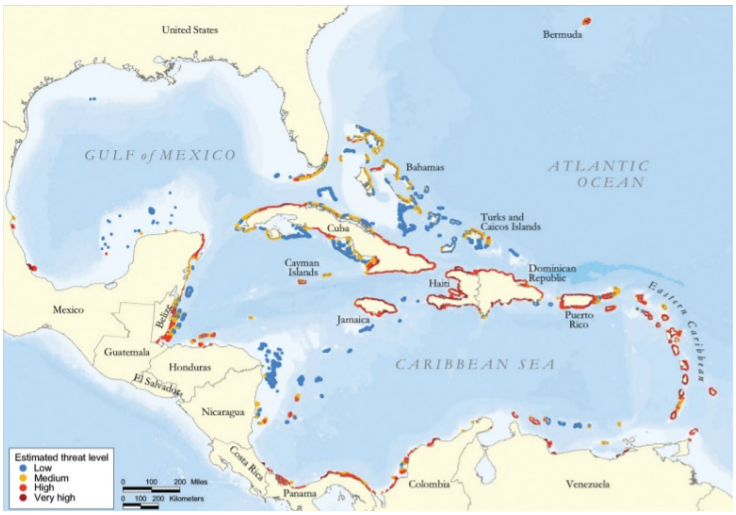


Figure 4.6. Reefs threatened by human activities, Lauretta Burke and Jonathan Maidens, Reefs at Risks in the Caribbean, 2004

As a matter of fact, not enough has been done by local, national and international authorities to protect the so-called 'rainforests of the oceans', which however are extremely important for both humankind and the environment in the region. Indeed, it is well established that these ecosystems provide food source and habitat to a great number of sea creatures, clean and filter surrounding waters and contribute to the economic development of local populations through numerous activities – including tourism and fisheries.[337] Furthermore, as scientists highlight, coral reefs protect coastal shorelines by dissipating wave and storm energy, thus representing an important natural defence system in the face of future extreme hazards.[338] Yet, the clock is ticking and if further commitments are not seriously addressed to reverse this trend, coastal

[334] Economic Commission for Latin America and the Caribbean, *Irma and Maria by Numbers,* Magazine of the Caribbean Development and Cooperation Committee (CDCC), 2018, p.3
[335] The Nature Conservancy, *A Revolution to Save Coral Reefs*, The Nature Conservancy official website, accessed on 02/01/2022. Available at: https://www.nature.org/en-us/about-us/where-we-work/caribbean/stories-in-caribbean/caribbean-a-revolution-in-coral-conservation/
[336] Fiona Harvey, *Caribbean has lost 80% of its coral reef cover in recent years*, The Guardian, 2013. Available at: https://www.theguardian.com/environment/2013/aug/01/caribbean-coral-reef-loss
[337] Organisation of Eastern Caribbean States, *Coral Reef* Ecosystems - *Biodiversity of the Caribbean*, OECS, 2009, p.4
[338] Lauretta Burke and Jonathan Maidens, Reefs at Risks in the Caribbean, World Resources Institute, 2004, p.14

reef cover in the Caribbean will be destinated to disappear, having tremendous consequences on the lives of millions of people who directly rely on them.

4.3. The Climate Change Migration Nexus in the Wider Caribbean Region

Out-bound migration flows in response to climate change and its negative repercussions will surely characterise Latin America and the Caribbean region throughout the XXI century. As scholars highlight, migration is not completely new among these countries, however, climate change will greatly influence the bulk of this phenomenon, thus enlarging the number of people who will decide or will be forced to settle elsewhere. In this context, according to the 2018 World Bank's Groundswell Report, between 9 and 17 million people will migrate, temporarily or permanently, by 2050 in order to cope with the negative consequences of climate change – including sea level rise, water scarcity and crops failure – in the LAC region alone.[339]

Yet, as mentioned in chapter one, estimates on climate migrations are extremely difficult to forecast and can highly vary among each other depending on the used methodologies. Furthermore, besides cases of sudden-onset disasters (e.g. hurricanes, floods, storms), where local inhabitants are forced to temporarily move due to climate conditions, people's decision to migrate is rarely attributable solely to climate change; on the contrary, this is the result of the combination of a number of different factors – for instance, social, economic and political -, which ultimately leads a person to undertake the journey and settle elsewhere.[340]

At the same time, when looking at the broader picture, due to a number of different reasons, climate change will have softer impacts on migration flows in Latin American and the Caribbean in comparison to other continents such as Africa. This is given by the fact that, firstly, countries in the region generally have stronger economies as well as higher adaptive capacities and financial resources to combat climate change and tackle its repercussions on local populations, thus focusing on possible solutions and adaptations strategies to apply to marginalised groups or vulnerable territories.[341] Secondly, if compared to other developing areas - including Africa or even South Asia –, the LAC region boosts a surprisingly developed industrial sector, with only a small share of these countries' population working in the

[339] Maria Paula Rubiano, *Climate migrants are 'invisible' to many South American Countries*, Grist Magazine, 2021. Available at: https://grist.org/climate/climate-migrants-are-invisible-to-many-south-american-countries/
[340] Lykke Andersen, Lotte Lund and Dorte Verner, *Migration and Climate Change* in Reducing Poverty, Protecting Livelihoods and Building Assets in a Changing Climate – Social Implications of Climate Change in Latin America and the Caribbean, the World Bank, 2010, p.197
[341] Kanta Kumari Rigaud, et al., *Groundswell – Preparing for internal climate migration*, cit., p.2

agricultural field.[342] This consequently results in lower numbers of people directly relying on climatic conditions for their subsistence and, as such, a consequently lower number of people affected by climate variability.

Yet, despite being in a better position than other regions in the world, climate migrations are constantly increasing in Latin America and the Caribbean as well. From low-lying coastal areas to high-altitude remote villages, the negative consequences of climate change and its repercussions on local communities are increasingly exacerbating, thus forcing a huge number of people to move, internationally or internally, in search of alternative livelihoods. In this context, although internal migration has always represented (and will always continue to represent) the biggest piece of the cake, the LAC region boosts incredibly high numbers of international migrants, especially directed towards North America (see figure 4.7.). This is given by the fact that, unlike the African continent, most countries in Latin American and the Caribbean can rely on higher levels of wealth and remittances, better channels as well as faster means of transportation, which all in all make the journey relatively easier.[343]

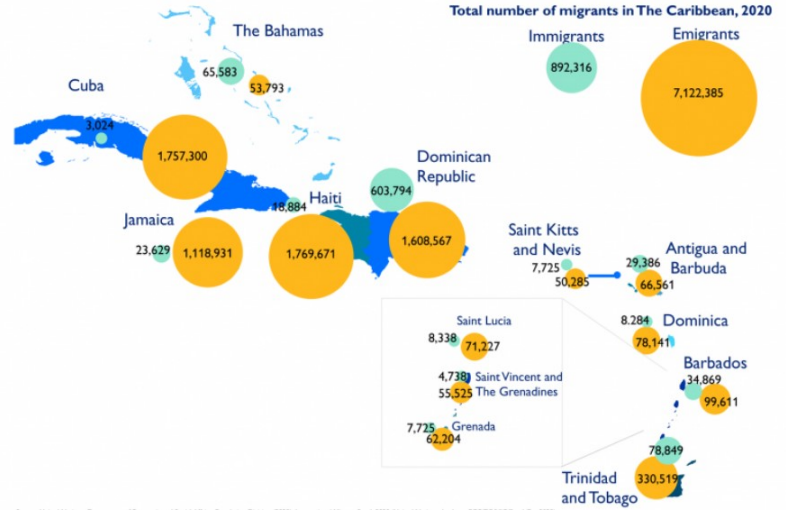


Figure 4.7. Total population of immigrants and emigrants, United Nations - Department of Economic and Social Affairs, United Nations Database, 2020

Furthermore, when analysing the climate change-migration nexus specifically in the Wider Caribbean region, a number of considerations must be done. First and foremost, as previously mentioned, following regional and global trends, migrations from these areas cannot be simply categorised as 'climate migrations', since there are a number of different factors that influence a person's decision to migrate (e.g. social, political, economic). In addition, as in the case of African countries, severe impacts of climate change on out-bound migration flows are especially provoked by the local populations' high levels of poverty as well as by the inability

[342] Ibid.
[343] Raoul Kaenzig and Etienne Piguet, *Migration and Climate Change in Latin America and the Caribbean* in People on the Move in a Changing Climate: The Regional Impact of Environmental Change on Migration, Vol. 2, 2014, p.10

and incapacity of local authorities to tackle specific issues (e.g. eradication of poverty, lack of early warning systems and dikes, better housing). Finally, to conclude, although most of the existing literature related to climate change and migrations in the WCR mainly focuses on tropical storms, cyclones and hurricanes, there are also other phenomena, which undoubtedly [will] lead to displacement among local populations, including sea level rise, floods, increasing temperatures and droughts.

Surely, sudden-onset disasters such as tropical storms and hurricanes represent the most common threat in the region for millions of people, whose lives are periodically influenced by these natural catastrophes during the hurricane season – estimates show that 39 million people were affected between 2000 and 2019, with Mexico, Cuba and Haiti representing the countries most impacted by these phenomena.[344] Despite predictions confirming that these events will continue triggering mostly temporal and internal migrations, scholars also stress the fact that the increase in the frequency as well as in the intensity of tropical storms, hurricanes and cyclones, which will repeatedly provoke serious damages to activities as well as infrastructures, thus exacerbating the general well-being of local populations, may push numerous households to relocate permanently in a completely different location outside national borders.[345]

Moreover, as a consequence of climate change – more specifically changing rainfall patterns, increasing intensity as well as severity of torrential rains, storms and hurricanes -, flooding has progressively become a burden on the shoulders of numerous people.[346] Floods, which have increased since the 1970s, are clearly impacting millions of people, who are now forced to migrate temporarily and internally in search of shelter, care and food. Yet, in this context, scholars have noted that "if permanent migration is the result, that is seen to reflect the state's deficient response rather than the natural disaster itself".[347] Once again, this shows how strengthening resilience and reducing vulnerability in the poorest countries of the Global South could lead to the improvement of the general well-being of local populations and, consequently, to the stabilisation of future migration flows.

[344] Office for the Coordination of Humanitarian Affairs, *Natural Disasters in Latin America and the Caribbean*, cit., p.5
[345] Council on Hemispheric Affairs, *Climate Migration in Latin America: A Future 'Flood of Refugees' to the North?,* COHA, 2010, p.8
[346] Luciana Fontes de Meira and Willard Phillips, *An economic analysis of flooding in the Caribbean – The Case of Jamaica and Trinidad and Tobago*, Economic Commission for Latin America and the Caribbean (ECLAC), 2019, p.7
[347] Lykke Andersen, Lotte Lund and Dorte Verner, *Migration and Climate Change*, cit., p.197

Finally, sea-level rise will probably represent one of the most daunting challenges that Caribbean communities as well as national authorities will have to face in the future, especially in low-lying coastal areas and small islands. Indeed, sea-level rise will undoubtedly drive migration movements, or even mass migrations, towards safer and more protected areas. As a matter of fact, unless proper countermeasures are carried out by local, national and international authorities to combat this phenomenon (e.g. construction of dikes and raised structures), between 2.9 and 9.9 million people living at an elevation of 1m will be affected, while, at an elevation of 10m, these estimates increase to 24.7-35 million people.[348] In addition, it should not be forgotten that several islands, atolls and cays in the region will run the risk to be completely submerged,[349] consequently provoking the disappearance of entire nations and creating the complex issue of stateless persons. In the context of sea-level rise, therefore, there is no doubt that migration flows will be permanent and mainly headed towards safer locations outside national borders, since, unlike migrants affected by other natural hazards and slow-onset events (e.g. floods and hurricanes), these people are unable to return home once the natural catastrophe is over.

4.4. Adaptation and Mitigation to Climate Change: Strengthening Resilience in the Wider Caribbean Region

In the Wider Caribbean region, not everyone will be willing nor able to relocate as a consequence of climate change. These people, in spite of the exacerbation of this phenomenon at the regional and global level, will be increasingly faced with its negative consequences. Yet, although natural hazards may hit different populations and environments with the same strength, impacts greatly vary depending on their levels of vulnerability – in other words, as defined by the IPCC, the propensity or predisposition to be adversely affected by an environmental shock.[350]

As such, in order to cope with the threat of being annihilated by climate change, different strategies have been developed by national, regional and international authorities as well as by local populations. These types of strategies, which include both adaptation and mitigation measures, despite pursuing the same ultimate goal, work on two separate levels. Indeed, as

[348] Raoul Kaenzig and Etienne Piguet, *Migration and Climate Change in Latin America and the Caribbean*, cit., p.14
[349] Council on Hemispheric Affairs, *Climate Migration in Latin America: A Future 'Flood of Refugees' to the North?,* COHA, 2010, p.7
[350] J. B: Robin Matthews, *Annex I*, cit., p.560

stated by the IPCC, while adaptation is "the process of adjustment to actual or expected climate and its effects, which seeks to moderate harm or exploit beneficial opportunities",[351] mitigation is "a human intervention to reduce emissions or enhance the sinks of greenhouse gases".[352] Examples of these measures, which have already been carried out by different stakeholders over the decades, are the usage of renewable and clean energy sources, afforestation, protection of local ecosystems (e.g. forests, coral reefs, etc.) and the cleaning of the oceans.[353]

Furthermore, in the Wider Caribbean region, as surely in many other regions of the world, the response to climate change will have many determinants: "the scale of the proposed response (individual, community, national, regional), the underlying purpose of the response (e.g. coping versus surrender or retreat), the ability to resource the response and the driver of the response (top down government led models or bottom up community driven)".[354] Yet, due to high levels of poverty, adaptation and mitigation strategies are not simple to implement in the region. It should not be forgotten that local populations as well as local governments do not have the necessary resources to buy basic day-to-day amenities (e.g. food, drinking water, shelter, medicines) and, as such, it seems extremely unlikely that they will invest most of their capital in other fields or tools to reduce people's vulnerability (e.g. disaster supplies, emergency generators, hurricane-proof structures, insurances, early warning mechanisms).[355] In the last few decades, however, due to the continuous exacerbation of climate conditions, some of these countries have understood the centrality of these measures, which instead are fundamental to protect local ecosystems as well as to safeguard local populations. With the help of the international community, national and regional authorities have increasingly developed several methods aimed at protecting territories and populations from the dangerous threat of climate variability.

For example, in order to satisfy human needs (e.g. agricultural production activities), vast tropical forests have been disappearing over the centuries in the Caribbean, resulting in major catastrophes for both local ecosystems and populations. As such, the restoration and the protection of these areas, together with the implementation of other related activities aimed at

[351] Ibid., p.542
[352] Ibid., p.554
[353] José Rafael Núñez Collado and Han-Hsiang Wang, *Slum upgrading and climate change adaptation and mitigation: Lessons from Latin America,* Cities – The International Journal of Science of Urban Policy and Planning, No.104, 2020, p.4
[354] Michael Taylor et al., *Climate Change and the Caribbean*, cit. p.187
[355] Levi Gahman and Gabrielle Thongs, *Development justice, a proposal: Reckoning with disaster, catastrophe, and climate change in the Caribbean*, The Royal Geographical Society, 2019, p.771

supporting this process (e.g. sustainable agricultural production activities), have become fundamental in the fight against climate change.[356] Furthermore, since most of Caribbean countries are small islands surrounded by water, different measures to restore and safeguard ocean ecosystems have been carried out and further intensified over the past decades. More specifically, the protection of coral reefs, the so-called 'rainforests of the oceans', is extremely important among these countries, especially because local populations have a special connection with marine environments and directly rely on them for their subsistence. Among these activities, it is possible to highlight the Caribbean Challenge Initiative (CCI), a transnational initiative, which involved the collaboration of several countries, aiming at protecting and better managing the ocean and its resources.

4.4.1. The Caribbean Challenge Initiative

As mentioned earlier, the Wider Caribbean region boosts an incredibly great variety of marine flora and fauna, representing an important livelihood source for local populations through different activities, including fisheries and tourism. Currently, however, extreme natural hazards, climate change, pollution and overfishing, among others, have continuously threatened these ecosystems, which are now running the risk of disappearing. As such, eleven countries and territories of the Caribbean – the Bahamas, the British Virgin Islands, the Dominican Republic, Grenada, Haiti, Jamaica, Puerto Rico, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, and the US Virgin Islands (see graph 4.8.), together with other stakeholders, launched in 2008 the Caribbean Challenge Initiative (CCI).[357]

Figure 4.8. CCI Member Countries and Territories, Caribbean Challenge Initiative – Overview, Caribbean Biodiversity Fund

[356] Felipe Melo, Severino Pinto, Pedro Brancalion, Pedro Castro, Ricardo Rodrigues, James Aronson, Marcelo Tabarelli, *Priority setting for scaling-up tropical forest restoration projects: Early lessons from the Atlantic Forest Restoration Pact*, Environmental Science and Policy, 2013, p.396

[357] Caribbean Challenge Initiative, *Overview – Fact Sheet*, Caribbean Biodiversity Fund, accessed on 07/01/2022, p.1. Available at: https://www.caribbeanbiodiversityfund.org/pdf/CCI_Overview_factSheet_HighRes.pdf

The CCI represents a milestone in the Caribbean area. For the first time in the region's history, national governments, the private sector and other global partners (NGOs and funding agencies) have joined forces to reach an unprecedented goal: accelerating actions on conservation and protecting these territories from the threat of climate change and human activities.[358] Particularly, as stated in the initiative's official website, CCI countries and territories committed themselves to:

1. "Conserve at least 20% of their nearshore environments by 2020 (the 20-by-20 goal)—effectively tripling marine protected area coverage in the region -; and
2. Ensure that these conserved areas are effectively managed into the future through a reliable, long-term finance structure".[359]

The Caribbean Challenge Initiative has been a complete success in the countries of the WCR. Not only the undertaken commitments were met, but some nations went even further, with percentages exceeding the 20% prefixed goal - the Dominican Republic (74.54%), St. Kitts and Nevis (49.93%), US Virgin Islands (43.56%), Puerto Rico (27.44%) and Haiti (22.84%).[360] All in all, this means that the Caribbean Challenge Initiative resulted in the great achievement of creating 21 million acres of new protected areas in only eleven countries, fostering local populations' socio-economic resilience and promoting the development of more nature-based approaches in the fight against climate change.[361]

The CCI represents only one of the several initiatives undertaken by national governments, the private sectors, local populations and other stakeholders in the fight against climate change in the Wider Caribbean region. For sure these actions cannot resolve global and regional longstanding issues related to changing climate conditions, however, they can foster the development of a new, more sustainable world, in which the environment and not humankind is the most important and central element.

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[358] United Nations, *Caribbean Challenge Initiative,* Sustainable Development Goals Partnerships Platform, accessed on 07/01/2022. Available at: https://sustainabledevelopment.un.org/partnership/?p=2320

[359] The Nature Conservancy, *Caribbean Challenge Initiative History – Tracking progress towards the 20-by-20 goal,* The Nature Conservancy website, *2021. Available at: https://storymaps.arcgis.com/stories/338a3167f31f4b7a9870f3776812219e*

[360] Kayla Youg, *Caribbean islands collaborate on marine conservation*, Cayman Compass, 2019. Available at: https://www.caymancompass.com/2019/07/17/caribbean-islands-collaborate-on-marine-conservation/

[361] The Nature Conservancy, *Caribbean Challenge Initiative,* The Nature Conservancy website, *2020. Available at: https://www.nature.org/en-us/about-us/where-we-work/caribbean/stories-in-caribbean/caribbean-challenge/*

Conclusion

Studies on climate variability are surely not something new. Scholars and scientists around the world had long suspected the existence of a possible link between the increase of human activities and the exacerbation of the earth's climatic conditions. As technologies were poorly developed and knowledge was still lacking, concrete evidence was never found and theories remained only theories. Nowadays the scientific community unanimously asserts that humankind is undoubtedly contributing, directly or indirectly, to the exacerbation of the planet's climate through the emissions of the so-called greenhouse gases, leading to the consequent warming of our planet's surface and atmosphere. What seventy years ago seemed to be only possible futuristic conjectures has become today one of the most pressing and demanding challenges our modern society will have to face in the XXI century.

By now, it is well established that climate conditions have been mutating over the decades for at least one century in virtually every corner of the globe. Slow-onset events (e.g. desertification, sea-level rise, coastal erosion) and sudden-onset disasters (e.g. hurricanes and storms, floods, heatwaves) have continuously increased in both frequency and intensity, exacerbating the lives of the vast majority of the planet's population. Yet, the negative impacts of climate change are not evenly felt among the territories and peoples of the world. On the contrary, as scholars have proved, the poorest shares of the populations in the poorest countries of the Global South will be those compelled to pay the highest price – in economic, environmental and social terms.

As a matter of fact, the exacerbation of climatic conditions has impacted people's activities and livelihoods in different parts of the world, above all in developing countries, forcing people to adapt in their territory of origin or to migrate towards safer and more productive locations. This has led at the end of the XX century to the emergence of a new school of thought, the so-called "alarmists", a group of scientists who started propagating catastrophic scenarios, assuming that millions of environmental migrants (or refugees) would invade en masse developed countries – particularly Europe and North America. Yet, this topic is not simple; on the contrary, it results much more complex than one could imagine.

This thesis focuses on the increasingly worrying exacerbation of the planet's climate conditions, investigating the negative impacts of this phenomenon on migration flows, particularly from the poorer areas of the Global South. Focusing on different topics and issues, throughout its chapters, the dissertation attempts to answer its research question "*in which ways*

is climate change affecting the phenomenon of migrations from the Global South, more precisely from the Sahel region in Africa and the Wider Caribbean Region in Latin America, towards areas that offer more favourable climate conditions as well as a healthier and safer life?".

Chapter One, 'The Climate Change-Migration Nexus', serves to introduce both topics of climate change and migration in general terms, also describing the connection the two phenomena share. The first section aims at better defining climate change, the scientific research and the theories behind this phenomenon – particularly analysing the IPCC and other international organisations reports - and why it represents such a peril for humankind. In this context, it results incredibly important defining in detail the difference between slow-onset events and sudden-onset disasters, analysing how these phenomena have impacted and may impact in the future local populations and ecosystems around the world.

This part is also important in order to have a better understanding of what climate change is as well as to introduce the negative impacts of this phenomenon on local populations, who are now compelled to find alternative ways to survive and adapt to the new status quo. It should be reminded that migration represents surely one of these adaptation strategies, however, not the only one. Although alarmist scenarios forecasted millions of environmental migrants from the Global South towards countries the Global North in the XXI century, in reality, as this thesis explained, international permanent migration does not even represent the preferred option for these people. As a matter of fact, the vast majority of [environmental] migrants will decide to relocate for a limited period of time internally (i.e. within national borders) or towards neighbouring states, confuting what has been instead claimed by alarmist scholars, politicians and parts of the media. Moreover, despite what numerous people in developed countries believe, the phenomenon of migration is extremely complex and, as such, environmental stressors cannot be identified as the sole reason for people to migrate. On the contrary, there are a number of different elements – economic, social, cultural and also environmental - that play a crucial role, influencing someone's decision to migrate or to stay.

However, not everybody affected by environmental - or any other - stressors is able or willing to migrate and settle elsewhere. In contrast, due to variegated reasons, among others negative impacts deriving from migration, high levels of poverty, gender restrictions and prospects to inheritance land, people may opt to remain in their territory of origin and find other ways to face the negative consequences of climate change. In this context, as studies have proved, three

core concepts result fundamental in order to overcome the impacts of climate change: adaptation, resilience and vulnerability. It should not be forgotten that a specific natural hazard may hit countries and populations with the same strength; yet impacts on ecosystems, peoples and consequently on migration flows highly vary depending on the levels of these concepts. For example, impacts of sea level rise will be extremely less significant in the Netherlands than in other developing countries (for example Puerto Rico) thanks to the financial capacity of the European country to invest on defence systems and to adapt to this phenomenon, thus creating numerous prerequisites for Dutch people to stay in their own country.

The second chapter, 'International Policy Framework on Climate Change and Migration', analyses the policy framework adopted over the decades by international, regional and local authorities in relation to these two themes. Being global issues, international cooperation and global governance result surely central to combat climate change and manage migration flows around the world, however, regional and local policies should not be disregarded. Of course, these two issues, which are extremely different from each other (but obviously connected), are analysed in two separate sections using different approaches, further deepening some of the most important pieces of legislation in question - both binding and not binding. In order to facilitate readers' comprehension, this chapter is also organised chronologically, thus ranking all these legal instruments from the oldest to the most recent one.

As regards climate change, actions aimed at combating this phenomenon have been multiple and very diverse. Efforts in strengthening cooperation and reducing the negative impacts of climate change on local populations and ecosystems have been visible to the world since at least the 1990s: the 1992 UN Framework Convention on Climate Change, the Kyoto Protocol, the 2030 Sustainable Development Goals, the Paris Agreement and the EU Green Deal. International organisations and nations of the world, in order to tackle climate change, have increasingly intervened on three different but equally important levels: adaptation, mitigation and protection. Policies have been therefore focusing, for example, on the effective reduction of climate change (e.g. reducing GHG emissions), addressing humanitarian needs to the affected populations and finding possible practices to adapt to the changing climatic conditions as well as to the new status quo.

Despite latest achievements, international law regarding climate change has proved to be weak and insufficient. International organisations as well as local and regional authorities, especially in developed countries of the Global North, should (and must) do more to pave the way for the

development of a greener and more sustainable world, implementing stronger and more effective laws and regulations. Even though, at least in words, there has been a breakthrough in combating climate change and its dangerous effects, commitment has been far from being enough. The international community has surely not done everything in its power to cope with climate change and reverse these negative trends, with several of the agreed targets in international fora not even respected (e.g GHG emissions reduction). Yet, we should not be naïve and forget that the primary objectives pursued by the nations of the world are driven by trade and economic relations, thus obviously limiting the implementation of specific policies in certain fields, including the protection of the environment and the limitation of industrial activities.

Moreover, as previously mentioned, climate change is extremely connected with the mobility of peoples, since it is (and will be) increasingly impacting migration flows worldwide, particularly from the poorer countries of the Global South. The international community is however lacking a global instrument which may be used to specifically protect all those people who are forced to flee their territory of origin to avoid the dangerous implications of climate change. In contrast, there are existing principles and branches of law – human rights law, environmental law, humanitarian law and nationality law – that can be applied to a certain extent to this context. In reality, the international community and all the stakeholders involved in this process have not even achieved to agree on a common definition for these people: environmental refugees, environmental migrants and environmentally displaced persons are some of the many labels which have been adopted over the years. Despite not being entirely politically and legally correct, these terms have continued to be used interchangeably by the international community, having though profound implications for millions of people affected by this question.

Among the three, [environmental] refugee represents the most important and most used term. The international legal regime on the protection of this category of people lays its foundation on the 1951 UN Refugee Convention and its 1967 Protocol relating to the status of refugee. Yet, neither the Convention nor the Protocol cite environmental stressors as a possible factor for a person to be recognised as a refugee; as such, different stakeholders assert that people fleeing their countries of origin due to climate change cannot be granted the refugee status protection. In order to cope with these issues, the Organisation of African Unity (OAU) and some Central American states developed two new legal instruments to be applied to the protection of environmental refugees – the OAU Refugee Convention and the Cartagena

Declaration of Refugees -, which have implemented the initial 1951 UN definition, including environmental stressors in this realm. Others have been the attempts of the international community and other international organisations to implement the existing legal framework for the protection of this category of people from this dangerous threat. This has led to the establishment of an important number of documents, among others, the 1998 Guiding Principles of Internal Displacement, the Kampala Convention, the Nansen Initiative and the 2016 New York Declaration for Refugees and Migrants.

After analysing both topics of climate change and migration at the global level and introducing the impacts of these two phenomena on local populations and ecosystems in general terms, the thesis switches to a more regional approach. Indeed, chapter three, 'Focus Africa', and chapter four, 'Focus Latin America', following the same structure, zoom in and investigate the climate-change migration nexus in the Sahel region in Africa and the Wider Caribbean region in Latin America. Furthermore, the two chapters also aim at emphasising what national and regional authorities have been doing to combat the phenomenon of climate change and to tackle migration flows at the local level, illustrating some of the most important projects and plans which have been developed over the years in order to defend local ecosystems as well as improve local populations' economic and social conditions.

In the first section, chapter three describes the peculiarity of the African context, highlighting the reasons why climate change is particularly dreadful in the whole continent. Low levels of health, education and living standards, together with the inability of national and regional authorities to cope with the region's challenging circumstances, have made the situation extremely difficult and almost unsustainable. The quick exacerbation of the regional climatic conditions is adding a further burden on African populations, the majority of which has always relied on natural resources for the success of their activities (e.g. agriculture, pastoralism and fisheries) and the overall subsistence of their families. As emphasised in this chapter, despite contributing the least to GHG emissions and consequently to the exacerbation of the planet's climate, African populations will be those forced to pay the highest price in terms of economic, social and environmental losses.

As reflected in the general continental scenario, climate change is harshly impacting populations and ecosystems also in the Sahel, a region which is considered by many one of the poorest in the whole world. These particular characteristics, as scientists highlight, have made the Sahel 'ground zero' for climate change. More specifically, changing climatic conditions

are believed to worsen in the upcoming century throughout the exacerbation of three different phenomena: increasing average temperatures, increasing frequency as well as intensity of droughts and, finally, decreasing rainfall patterns. Undoubtedly, this negative trend will have severe repercussions on the mobility of peoples, who will be forced to move and search for a safer life as well as a more productive land. Yet, unlike what the public opinion, politicians and the media in developed countries believe, Sahelian (and African) populations will not try to relocate permanently in another region – in this case Europe -; on the contrary these movements will tend to be headed short-distance, most of the times within national borders or towards neighbouring countries, and follow a circular pattern.

Not everybody can or is willing to migrate from the Sahel region in search of better living and working conditions. People forced to stay behind have been increasingly obliged to find new adaptation and mitigation strategies in order to cope with climate change and its negative consequences. Examples of mitigation and adaptation actions are numerous and have been used in different sectors since the 1970s by the stakeholders involved both in the public and private sectors. These range from water management to the plantation of trees, and from the development of irrigation systems to the creation of new jobs in order to provide families the possibility to diversify their incomes in times of hardship. Among the most important projects, as described in the last part of the chapter, the Great Green Wall initiative should be surely highlighted. This is an ambitious plan of creating a 'wall' of trees to stop desertification, combat climate change and restore degraded areas in the Sahel region.

Finally, as regards the last chapter, the negative consequences of climate change will also be increasingly felt in Latin America and the Caribbean. Following global trends, this phenomenon will severely impact local populations and ecosystems across the region through the exacerbation of three different phenomena: increasing temperatures, decreasing average precipitations and escalation of extreme natural hazards. As we know, however, impacts will not be evenly distributed among these peoples; on the contrary, the poorest shares of the population will be those compelled to pay the highest price. In this context, the LAC region, despite enjoying relatively higher levels of economic development than the African continent (e.g. stronger economies, bigger industries, better infrastructures), still suffers from high levels of poverty, lack of necessary resources as well as inappropriate means of adaptation, thus making the overall regional situation extremely difficult. Furthermore, the inability of national and regional authorities to react in the face of environmental shocks, especially due to the lack

of necessary funds, further exacerbates the situation and poses a heavy burden on local populations' shoulders.

Reflecting the regional scenario, also the Wider Caribbean region is not exempt from the exacerbation of climatic conditions. More specifically, considering that the majority of these territories are small, low-lying island states with limited economic capacities, the WCR will be affected by a number of different environmental stressors, which will increasingly reduce countries' resilience and their adaptive capacities. Indeed, local populations will not be threatened only by the escalation of sudden-onset disasters (e.g. hurricanes, typhoons, storms and heatwaves) but also by the aggravation of slow-onset events (particularly sea-level rise, salinisation, coastal erosion and decreasing precipitations). All in all, the exacerbation of climatic conditions in the Wider Caribbean region will make the situation almost unbearable for millions of people, who will see no other choice but migrate. Interestingly enough, migration flows in the WCR have proved to be extremely different if compared to the African continent. Although internal migration will continue to represent the most common type of migration, the region boosts an incredibly high number of international migrants, especially directed towards North America. This is given by a number of different reasons, including the fact that specific environmental stressors - say sea-level rise or coastal erosion - may lead to the disappearance of entire states, thus forcing local populations to find shelter outside national borders.

Of course, also in the Wider Caribbean Region, not everyone will be willing nor able to relocate as a consequence of climate change. As such, different strategies have been developed by national, regional and international authorities as well as by local populations to cope with climate change and its negative consequences. Similarly to what has been previously said, examples of adaptation and mitigation measures in these areas include the usage of renewable and clean energy sources, afforestation, protection of local ecosystems (e.g. forests, coral reefs, etc.) and the cleaning of the oceans. Among these projects, we can surely include the Caribbean Challenge initiative, an ambitious plan aimed not only at protecting and better managing the ocean and its resources but also promoting other activities which are fundamental for local populations' survival, including fisheries and tourism.

To conclude, it must be highlighted that this study is far from being complete. Further academic research is surely needed, especially when considering that the two fields of climate change and migration are rapidly and continuously mutating. It is true that the exacerbation of the

planet's climate is undoubtedly a current, common concern linked to the increase of human activities, however, its effects on populations, ecosystems and consequently on migration flows are far from being certain. This is given by the fact that there are different variables, including humans coping capacities, adaptation strategies, development of new technologies aimed at reducing the effects of climate change, which are still unknown and may greatly influence the severity of this phenomenon, thus mitigating its effects. Time will certainly tell us what the future will hold; yet, for the time being, we should start setting the basis for the establishment of a greener and more sustainable world, where climate change will not represent such a frightful issue for the peoples of the earth.

Terminology

Adaptation: "In human systems, the process of adjustment to actual or expected climate and its effects, which seeks to moderate harm or exploit beneficial opportunities." (Intergovernmental Panel on Climate Change, 2014)

Climate Change: "[A] change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods." (UN Framework Convention on Climate Change, Article 2, 1992)

Coping capacity: "The ability of people, institutions, organizations, and systems, using available skills, values, beliefs, resources, and opportunities, to address, manage, and overcome adverse conditions in the short to medium term" (Intergovernmental Panel on Climate Change, 2013)

Environmental degradation: "The reduction of the capacity of the environment to meet social and ecological objectives and needs. Degradation of the environment can alter the frequency and intensity of natural hazards and increase the vulnerability of communities. The types of human-induced degradation are varied and include land misuse, soil erosion and loss, desertification, wildland fires, loss of biodiversity, deforestation, mangrove destruction, land, water and air pollution, climate change, sea level rise and ozone depletion." (United Nations Office for Disaster Risk Reduction, 2009)

Environmental migration: "Environmental migrants are persons or groups of persons who, for compelling reasons of sudden or progressive changes in the environment that adversely affect their lives or living conditions, are obliged to leave their homes or choose to do so, either temporarily or permanently, and who move either within their country or abroad." (International Organization for Migration, 2007)

Exposure: "The presence of people, livelihoods, species or ecosystems, environmental services and resources, infrastructure, or economic, social, or cultural assets in places that could be adversely affected by environmental and climate change impacts." (Intergovernmental Panel on Climate Change, 2014) Also, "the situation of people, infrastructure, housing, production capacities and other tangible human assets located in hazard-prone areas." (International Displacement Monitoring Centre, 2017)

Disaster: “A serious disruption of the functioning of a community or a society involving widespread human, material, economic or environmental losses and impacts, which exceeds the ability of the affected community or society to cope using its own resources.” (United Nations Office for Disaster Risk Reduction, 2009)

Displacement: “A forced removal of a person from his or her home or country, often due to armed conflict or natural disasters.” (International Organization for Migration, 2011).

Forced Migration: “A migratory movement which, although the drivers can be diverse, involves force, compulsion, or coercion.” (International Organization for Migration, 2019)

Hazard: “A potentially damaging phenomenon, substance, human activity or condition that may cause loss of life, injury or other health impacts, property damage, loss of livelihoods and services, social and economic disruption, or environmental damage.” (United Nations Office for Disaster Risk Reduction, 2009)

Internally displaced persons (IDPs): “Persons or groups of persons who have been forced or obliged to flee or to leave their homes or places of habitual residence, in particular as a result of or in order to avoid the effects of armed conflict, situations of generalized violence, violations of human rights or natural or human-made disasters, and who have not crossed an internationally recognized State border” (International Organization for Migration, 2011).

Land degradation: “The many human-caused processes that drive the decline or loss in biodiversity, ecosystem functions or ecosystem services in any terrestrial and associated aquatic ecosystems” (Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services, 2018)

Migration: “The movement of a person or a group of persons, either across an international border, or within a State. It is a population movement, encompassing any kind of movement of people, whatever its length, composition and causes; it includes migration of refugees, displaced persons, economic migrants, and persons moving for other purposes, including family reunification.” (International Organization for Migration, 2011)

Migrant: “Any person who is moving or has moved across an international border or within a State away from his/her habitual place of residence, regardless of (1) the person’s legal status; (2) whether the movement is voluntary or involuntary; (3) what the causes for the movement are; or (4) what the length of the stay is” (International Organization for Migration).

[Planned] Relocation: "A process whereby a community's housing, assets, and public infrastructure are rebuilt in another location." (World Bank, 2010)

Resilience: "The ability of a system and its component parts to anticipate, absorb, accommodate, or recover from the effects of a hazardous event in a timely and efficient manner, including through ensuring the preservation, restoration, or improvement of its essential basic structures, identity and functions, while also maintaining the capacity for adaptation, learning and transformation." (Intergovernmental Panel on Climate Change, 2014)

Refugee: A person "owing to well-founded fear of being persecuted for reasons of race, religion, nationality, membership of a particular social group or political opinion, is outside the country of his nationality and is unable or, owing to such fear, is unwilling to avail himself of the protection of that country; or who, not having a nationality and being outside the country of his former habitual residence as a result of such events, is unable or, owing to such fear, is unwilling to return to it." (United Nations High Commissioner for Refugees, 2010)

Remittances: "Cross-border, person-to-person payments of relatively low value. These are typically recurrent payments by migrant workers to their relatives in their home countries to cover a substantial part of their daily expenses." (International Fund for Agricultural Development, 2015)

Seasonal migration: "Migration traditionally linked to the seasonal calendars of agriculture, such as when labour is in higher demand during planting or harvesting." (International Organization for Migration, 2011)

Trapped populations: "Populations who do not migrate, yet are situated in areas under threat, […] at risk of becoming 'trapped', where they will be more vulnerable to environmental shocks and impoverishment." (Foresight, 2011)

Vulnerability: "The propensity or predisposition to be adversely affected. Vulnerability encompasses a variety of concepts including sensitivity or susceptibility to harm and lack of capacity to cope and adapt." (Intergovernmental Panel on Climate Change, 2014) Also, "the conditions determined by physical, social, economic and environmental factors or processes which increase the susceptibility of an individual, a community, assets or systems to the impacts of hazards." (International Displacement Monitoring Centre, 2017)

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