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Human Security in a Warming Planet

Assessing the “undemocratic” nature of the
environmental crisis as an obstacle to its mitigation

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TABLE OF CONTEXT

| | |
|------------------------|----|
| INTRODUCTION..... | 4 |
| LITERATURE REVIEW..... | 8 |
| METHODOLOGY..... | 14 |

CHAPTER I

Debating the environmental risk as the greatest global security concern

| | |
|--|----|
| 1.1 The climate vocabulary | 16 |
| 1.2 The interconnection between climate change and security | 17 |
| 1.3 The environmental crisis: from minor concern to global security threat | 18 |
| 1.3.1. <i>A/64/350 UN General Assembly - Security Council Report</i> | 20 |
| 1.3.2. <i>The Paris Agreement</i> | 21 |
| 1.3.3. <i>European Union climate transition</i> | 21 |
| 1.3.4 <i>The challenging implementation of the climate agenda</i> | 23 |

CHAPTER II

Human security facing the environmental crisis: unravelling consequences on individuals and communities

| | |
|---|----|
| 2.1 Human security and its contemporary realities | 28 |
| 2.2 Categories ensuring individuals' safety | 30 |
| 2.2.1 <i>Economic Security</i> | 30 |
| 2.2.2 <i>Food security</i> | 31 |
| 2.2.3 <i>Health Security</i> | 32 |
| 2.2.4 <i>Environmental security</i> | 35 |
| 2.2.5 <i>Personal and political security</i> | 35 |
| 2.2.6 <i>Community security</i> | 38 |

CHAPTER III

Comparative Case Studies: Exploring Climate-Induced Human Insecurity

| | | |
|-------|--|----|
| 3.1 | National and international prospectives | 40 |
| 3.2 | United States: financial uncertainty and reduced quality of life | 43 |
| 3.2.1 | <i>Economic fluctuations</i> | 43 |
| 3.2.2 | <i>Food quality, availability, and prices</i> | 45 |
| 3.2.3 | <i>Adverse health outcomes: Air Quality Index</i> | 45 |
| 3.2.4 | <i>Physical security of U.S coastal populations</i> | 46 |
| 3.2.5 | <i>Adaptation policies and final remarks</i> | 48 |
| 3.3 | Niger: agricultural stress and humanitarian crisis | 50 |
| 3.3.1 | <i>Agriculture: the centre of a vulnerable economy</i> | 51 |
| 3.3.2 | <i>Extreme levels of poverty</i> | 53 |
| 3.3.3 | <i>Multifaced displacement dynamics</i> | 53 |
| 3.3.4 | <i>The highest population growth rate</i> | 55 |
| 3.3.5 | <i>Adaptation policies and final remarks</i> | 56 |
| 3.4 | Bangladesh: coastal erosion and internal migration | 58 |
| 3.4.1 | <i>Salinity affecting food and water resources</i> | 59 |
| 3.4.2 | <i>Loss of property and coastal degradation related insecurity</i> | 60 |
| 3.4.3 | <i>Growing climate migration pressure</i> | 61 |
| 3.4.4 | <i>Adaptation policies and final remarks</i> | 63 |
| | CONCLUSION | 65 |
| | BIBLIOGRAPHY | 68 |

INTRODUCTION

Climate change is reshaping the way geopolitical actors conceptualize the notion of security. Today, its consequences represent a risk not only to the environment itself but have also proven to be a threat to national security and international governance¹. Natural calamities and pandemics have emphasized the need to enlarge the very concept of security by broadening it and adapting it to different hazards². The rising threat of the environmental crisis is defined today as one of the most prominent global challenges to national, international, and human security. The environmental risk has been recognised as one of the World's most critical long-term threat with the greatest potential to harm the planet and people over the next 10 years³. A reason for this belief relates to the consequences on human life manifesting through multiple aspects, from the environment to social relations and from the economy to national security.

Although the environmental crisis represents a global concern, the consequences occur locally and vary according to the circumstances in which different nations revolve. The focus of the document is to contextualize how increasing environmental variations affect populations in different areas of the World. In this way, it is meant to highlight how human security is perceived differently based on the existing power imbalances among states in dealing and adapting to the climate crisis. In delving into the issues, a key factor of the crisis is meant to be highlighted, namely its “undemocratic” nature. From the one hand, this concept is understood as the diverse ways in which the crisis manifests on different populations. Climate change most severe consequences loom over already fragile states and regions, facing environmental, geographic, institutional, and socioeconomic vulnerabilities. On the other hand, the significant disparities in energy resources, income, and expertise between industrialized and developing nations determine how the countries primarily responsible for the crisis are also the ones with significant advantages and opportunities when it comes to formulating and implementing climate policies. These overall differences, together with the multiple definitions of human security, ultimately constrains the mitigation approach to the crisis.

By considering climate change has the independent variable, the aim is to analyse its impact, both direct and indirect, on human security, here as the dependent variable. To provide a clearer picture of the current situation, a comparison between three countries will be provided with the aim of demonstrating not only the evolving concept of climate-related human insecurity but

¹ Centro Studi Politica Internazionale, “Cambiamenti climatici e governance della sicurezza: la rilevanza politica della nuova agenda internazionale”, 2010.

² *Ibidem*.

³ World Economic Forum, “The Global Risks Report 2022”, 17th Edition, 2022.

also how this is perceived differently on the basis of countries' priorities and capabilities. We must understand the environmental crisis not merely as a physical or scientific issue, rather as a site of contestation between several actors that define and respond to it differently⁴. Then, it is crucial to consider the complexity of climate security in order to understand the many channels and agents recommended for climate change adaptation⁵.

The question this document intends to answer consists of two parts: the first section focuses on how climate change is affecting populations in different areas of the world, harming human security, while the second part advances the extent to which these differences increase the “undemocratic” nature of the crisis, influencing its resolution.

In finding an adequate response to this issue, the initial chapter provides an introductory overview of climate change concepts and their implications for global security. It starts by clarifying the terminology associated with climate change, encompassing global warming, climatic variability, and environmental shifts, all contributing to the unfolding environmental crisis. This section underscores how climate change has fundamentally reshaped the notion of security, evolving from a purely geostrategic perspective to a multifaceted and intricate phenomenon. It delves into the historical evolution of the environmental crisis, tracing its trajectory from a marginal concern to a pressing international security threat due to the escalating frequency and severity of climate-related events. Additionally, deliberations held within the United Nations Security Council and United Nations General Assembly are provided together with the European Union's commitment to address climate action and security priorities. While acknowledging the challenges faced in implementing effective climate policies, it highlights specific issues regarding the absence of a unified mitigation strategy, limited international cooperation, and external disruptions, illustrated by the COVID-19 pandemic. In conclusion, this chapter underscores the importance of addressing climate change as the predominant security challenge in the forthcoming years, emphasizing the necessity of mitigating its impact on the world's most vulnerable economies and populations.

Chapter 2 explores the concept of human security and its contemporary realities. It begins by emphasizing the centrality of protecting human beings and the shift towards prioritizing the human dimension. Human security has become a focal point in contemporary development agendas, encompassing various security norms and guiding policies related to development, environment, health, peace, conflict, and human migration. The chapter delves into the seven

⁴ Hulme, M., “Why we disagree about Climate Change: Understanding Controversy, Inaction and Opportunity”, Cambridge: Cambridge University Press, 2009.

⁵ *Ibidem*.

dimensions of human security, including economic security, food security, health security, environmental security, personal security, political security, and community security. These dimensions collectively address the wide range of threats and vulnerabilities individuals and communities face in their pursuit of well-being and dignity. It discusses the ways in which the environmental crisis has significantly impacted these dimensions, leading to various consequences for the security of every individual. Finally, this section underscores the importance of considering these dimensions in developing effective adaptation policies and addressing the disparities between countries in their ability to withstand climate-related threats.

To conclude, third and final chapter delves into national and international perspectives on climate-induced human insecurity, while also introducing the “undemocratic” aspect of the crisis. It highlights the national perspective of human security in order to understand the unique challenges each country has to face, but it also argues the importance of international cooperation, as climate change transcends national boundaries. To prove the above, this section presents a comparative analysis that considers the United States of America, Niger, and Bangladesh. It emphasizes the need for a contextualized and people-centred approach to address environmental challenges, while also recognizing their interconnection at the international level.

In the case of the United States, the U.S. Department of Defense recognizes climate change as a national security issue. It highlights the significant economic losses due to extreme weather events, which reflects on citizens’ economic security. Repercussions are also seen on food security, air quality, and physical security, especially for coastal populations. While examining current adaptation policies the need for a more people-oriented perspective in addressing climate-induced human insecurity is emphasised. While the U.S. government has taken steps toward climate change’s economic aspects, this section suggests that a broader focus on the well-being of the population is necessary.

From a different perspective, the security of the Nigerian population can be seen as a complex and intricate dilemma arising from a combination of elements. They include severe poverty, agricultural strain, humanitarian crises, and environmental degradation. This multifaceted scenario encompasses various dimensions, ranging from escalating instances of drought and erratic precipitation patterns to agricultural setbacks and malnutrition concerns. Also, from a growing population growth rate coupled with elevated levels of poverty and inequality. To tackle these challenges, Niger has articulated a range of climate adaptation strategies, encompassing the adoption of climate-resilient agricultural techniques, enhancements in infrastructure, and the establishment of renewable energy goals. Nonetheless, it is imperative

to underline that the effective implementation of these strategies and the realization of climate and developmental objectives relates significantly upon the availability of substantial financial resources and the provision of institutional support.

Lastly, Bangladesh, situated in a vulnerable tropical region along the Gulf of Bengal, happens to be extremely susceptible to coastal inundation and river flooding, adversely affecting human security. These environmental changes have already begun to impact the socio-political landscape of the country, with problems of food and health security, of internal migration and related political instability. Internal Displaces Persons have led to increased competition for resources, including land, water, and food, altering the already inadequate infrastructure and socioeconomic conditions of the country. Here, the government commitment to climate adaptation through emergency response and housing initiatives for climate refugees is highlighted. Unfortunately, adaptation measures might cause inequalities within local communities, increasing the need for developed countries to support these efforts and mitigate climate consequences to prevent a global crisis of climate refugees.

Final conclusions on the “undemocratic” character of the crisis and the need for international cooperation to efficiently achieve human security will then be drawn.

LITERATURE REVIEW

Within the academic literature, the notion of security has often been neglected. Buzan was clear in describing it as an “underdeveloped concept”⁶. Certainly, the ambiguity that marks the concept of security made it unclear as well as inadequately explained⁷ but not necessarily an “essentially contested” one as Buzan has revealed⁸. Baldwin noted how a good amount of security studies have mostly linked security to the military force⁹. Though, originally, national security had the objective of ensuring political independence and territorial integrity, therefore interpreting security as the protection of the State from external threats, such as war or military invasion¹⁰. Wolfers explained how security, as a value, is hardly objectively measured if compared to power and wealth, but it still entails identifying the principles that require protection, from some kind of threats and at what costs¹¹. Individuals, states, and other actors, they all value security differently and may have to sacrifice something in order to assure it¹². There are a number of alternative discourses, articulated by environmental advocates and academic analysts, which conceptualize security differently on the basis of whose security is at risk, who is accountable for and capable of responding to the threat, how is the type of danger described and what countermeasures are recommended to deal with it¹³. Therefore, the always known multidimensional aspect of security is hardly contestable. Baldwin pointed out that as the Cold war ended, there has been an attempt to rethink the security issues, although not necessarily redefining the concept itself¹⁴. With the advent of globalization and the growth of the knowledge society, the concept of security has expanded to include economic, environmental, social, and human security.

The momentum for the forging of the relationship between the environment and security began as early as the 1990s with the emergence of the discipline now known as Environmental Security. This field featured organizations traditionally engaged in international security and interested in redefining the geopolitical scenarios that had occurred following the dissolution

⁶ Buzan, B., “People, states, and fear: the national security problem in international relations”, Brighton, Wheatsheaf Books, 1983, pp. 3–4.

⁷ Baldwin, D.A. “The concept of security”, *Review of international studies*, 23.1, 1997, pp. 5-26.

⁸ Buzan, B., “People, states, and fear: the national security problem in international relations”, Brighton, Wheatsheaf Books, 1983, pp. 3–4.

⁹ Baldwin, D.A. “The concept of security”, *Review of international studies*, 23.1, 1997, pp. 5-26.

¹⁰ *Ibidem*.

¹¹ Wolfers, A., “National security as an ambiguous symbol” *Political science quarterly*, 67.4, 1952, pp. 481-502.

¹² *Ibidem*.

¹³ McDonald, M., “Discourses of climate security”, *Political geography*, 33, 2013, pp.42-51.

¹⁴ Wolfers, A., “National security as an ambiguous symbol”, *Political science quarterly*, 67.4, 1952, pp. 481-502.

of the Soviet Union¹⁵. Indeed, the emergence of the concept of Environmental Security has marked the beginning of a sudden growth in interest and application of environmental studies in International Security. Thomas Homer-Dixon, a Canadian scientist, is considered the pioneer in this field with his extensive research that has formed the yardstick of Environmental Security studies to date¹⁶. Since then, environmental interest as well as climate change studies have intensified significantly. Notably, the hypothesis of climate change as a security threat has gained academic and practical acceptance. Indeed, in his discourse, McDonald illustrated the numerous ways in which the security climate link can be conceived, differentiating between national, international, human, and ecological security¹⁷. Significant differences in the reasoning behind this link suggest fundamentally diverse approaches to the issue of climate change as a security concern. Understanding these different patterns, logics, and ramifications on climate security has helped comprehend the larger politics of climate change¹⁸. Indeed, the objective of this document is not only to recognise climate change as a security issue, but to try emphasising it as the primary global hazard to be addressed.

A significant amount of art has focused on linking climate change and security on the basis of the potential role played by the former in increasing the risk of conflict and violence. A number of scholars are confident that there is a connection between the two phenomena. Mach *et al.* in their research were able to affirm that environmental trends and hazards are in fact increasing the risk of organized armed conflict within countries¹⁹. The experts estimated that from 3% to 10% of conflict risk in the last century has been influenced by changes in the environment²⁰. Others point to the possibility that climate change may indirectly cause conflict. Indeed, the direct effect that climate change has on water, like changes in storm intensity, rise in sea level, floods, indirectly affects regions at high risk of conflict²¹. De Bruin *et al.* affirmed that the increasing water scarcity and water-related stress are going to act as threat multipliers for conflict risk as water security is directly linked to human security²². Thought, this relation still remains widely debated as some continue to be sceptical regarding the normative and analytical basis linking the two events²³. Buhaug's believes that climate change is relatively unrelated to

¹⁵ Santangelo, S. "Cambiamenti Climatici e Sicurezza Internazionale" Documenti geografici, 2, 2022, pp. 317-328.

¹⁶ Homer-Dixon, T., "Environmental scarcities and violent conflict: evidence from cases", International security, 19.1, 1994, pp. 5-40; and "Environment, Scarcity and Violence", Princeton University Press, 1999.

¹⁷ McDonald, M., "Discourses of climate security", Political geography, 33, 2013, pp.42-51.

¹⁸ *Ibidem*.

¹⁹ Mach, K. J., *et al.*, "Climate as a risk factor for armed conflict", Nature, 571, 2019, pp. 193-197.

²⁰ *Ibidem*

²¹ De Bruin S., Knoop J., Visser., H. and Ligtoet W., "Linking water security threats to conflict; an exploration of pathways", The Hague: PBL Netherlands Environmental Assessment Agency, 2018.

²² *Ibidem*.

²³ McDonald, M., "Discourses of climate security", Political geography, 33, 2013, pp.42-51.

the creation of conflict²⁴, just as Gleditsch reflects on the lack of sufficient evidence for solidifying this relationship²⁵.

Another widely discussed topic linking climate change and security focuses on the increase in forced migration and displacement. The association between environmental change and migration was rarely popular until 2010 as there were only few publications investigating this phenomenon²⁶. Starting from 2010, as Piguet pointed out in his latest paper, the number of research articles studying the effects of climate change on human mobility has increased exponentially²⁷. Even if he stresses that the climate-migration field has matured, creating a knowledge base that permits new theories to come forward²⁸, scholars still find it difficult to accurately understand the evolution of this trend. It is common to read predictions of mass migrations put in place to flee the areas most affected by climate change²⁹. Nevertheless, there is still struggle in isolating environmental factors from other triggers of migration, making it not easy to determine when a relocation is directly caused by environment disasters³⁰. Giampaolo and Ianni are indeed doubtful in directly connecting natural disasters and migration, highlighting the impossibility of detaching climate migration from its many interrelated causes, such as the social, political, and economic factors that characterize a given community³¹.

Despite the art focusing primarily on the potential threats arising from increased climate conflict and climate migration, there are indeed many direct and indirect consequences triggered by the climate crisis that are harmful to human security. Indeed, this article makes its way through the literature by concretely describing the effects of climate change on people, going beyond the risk of conflict and migration. For over 20 years, the notion of human security has received a substantial amount of attention at both the academic and political level, mainly employed to frame and explore issues associated with societal transformation³². For Gasper, the concept of “human security” has brought a shift of focus, within the security discussions, from the state level toward human beings as possible victims; from physical violence as the sole threat; and

²⁴ Buhaug, H., “Climate not to blame for African civil wars”, Proceedings of the National Academy of Sciences, 107(38), 2010, pp. 16477-16482

²⁵ Gleditsch, P., “Whither the weather? Climate change and conflict”. Journal of Peace Research, 49.1, 2012, pp. 3-9.

²⁶ Piguet, E., “Linking climate change, environmental degradation, and migration: An update after 10 years”, Wiley Interdisciplinary Reviews: Climate Change, 13(1), 2022.

²⁷ *Ibidem*.

²⁸ *Ibidem*.

²⁹ Cattaneo, C., “Cambiamento climatico e migrazione”. Equilibri, 20(1), 2016, pp. 101-109.

³⁰ *Ibidem*.

³¹ Giampaolo, M. & Ianni, A., “Cambiamento climatico e migrazioni”. Volti delle Migrazioni, 2019.

³² McDonald, M., “Human security and the construction of security”, Global Society, 16.3, 2002, pp. 277-295.

from assault as the only relevant harm³³. In line with the multidimensional concept of “security”, many advocates define human security on the basis of a variety of designs, although all sharing the idea of a shift in the referent object of security, the individual, in the security threat, the person quality of life, and in the agents appointed for attaining security, non-state actors³⁴. Indeed, in order to comprehend human security debate, this list of actors and roles should be extended³⁵. States and multilateral organizations are not the only relevant players, as Gasper suggested³⁶.

Research on the connections between environmental change and human security started in the late 1990s, being interpreted in light of the possibility that particular actions, taken to face environmental change, may have implications on human security³⁷ acknowledging the importance of shifting security away from the conventional and sole focus of armed conflict³⁸. The driver of these studies lies in populations vulnerability in response to changing environmental conditions, particularly in relation to climate change³⁹. The literature has started seeing the environment, development, and human security as elements of the same issue, opening up the discussion to the understanding of human vulnerability in different places and particular circumstances. Indeed, human security has been studied by different disciplines as a heterogeneous subject, producing knowledge about a variety of environmental challenges across different locations, industries, and scales of investigation⁴⁰. The discussion linking climate change and human security is still open for further exploration given the increasing polarization of the debate, as Santangelo points out, with opposing sides both at the international level, developed vs. developing countries, but also at the domestic policy one, innovative economies vs. depressed areas⁴¹. Moreover, while it is clear how the crisis manifests at the global level, the effects are mainly local, thus bringing numerous studies in the field to reduce their analysis solely on one country or continent.

³³ Des, G., “The idea of human security”. Pre-final version of a chapter that appeared in 2010 in K. O’Brien, A. L. St. Clair, B. Kristoffersen (eds.), “Climate Change, Ethics and Human Security”, Cambridge: Cambridge Univ. Press, 2010, pp.23-46.

³⁴ McDonald, M., “Human security and the construction of security”, *Global Society*, 16.3, 2002, pp. 277-295.

³⁵ Des, G., “The idea of human security”. Pre-final version of a chapter that appeared in 2010 in K. O’Brien, A. L. St. Clair, B. Kristoffersen (eds.), “Climate Change, Ethics and Human Security”, Cambridge: Cambridge Univ. Press, 2010, pp. 23-46.

³⁶ *Ibidem*.

³⁷ Dalby, S. “Security and Environment Linkages Revisited”, In: *Globalization and environmental challenges: reconceptualizing security in the 21st century*. Berlin, Heidelberg: Springer Berlin Heidelberg, 2008. p. 165-172

³⁸ McDonald, M., “Human security and the construction of security”, *Global Society*, 16.3, 2002, pp. 277-295.

³⁹ Renner, M., “Fighting for Survival: Environmental Decline”, *Social Conflict, and the New Age*, 1996.

⁴⁰ McDonald, M., “Human security and the construction of security”, *Global Society*, 16.3, 2002, pp. 277-295.

⁴¹ Santangelo, S. “Cambiamenti Climatici e Sicurezza Internazionale” *Documenti geografici*, 2, 2022, pp.317-328.

Among the case studies selected, the literature on the current state of affairs regarding Africa's environmental and human insecurity state is the most conspicuous compared to the other two considered. Several authors have analysed those African countries that have experienced increased environmental deterioration, exacerbated by the continent's global position, economic dependence, poverty, and corruption. Miguel E., an economist at Berkeley, focused on the African continent as he determined the significant correlation between temperature and conflicts in those regions⁴². He pointed out how, given the heavy dependence for survival of many African countries on agriculture, even small temperature changes can greatly impact their harvests and potentially increase likelihood of armed conflict⁴³. Thought, only a few have analysed climate-induced human insecurity in Niger. In this regard, Sartoni and Fattibene aimed to assess the regional ramifications of climate change in the Sahel, including Niger, on three overarching dimensions of human security; the environmental, economic, and humanitarian aspects⁴⁴. Some focused on the particular scenario of the securitization of intra-African migration, escalating in deteriorating relations between citizens and the government resulting in regional instability⁴⁵. While others investigated the factors that shape climate change adaptation strategies and their consequences on household income and food security in rural Niger⁴⁶.

It was possible to identify a number of readings focusing on the confrontational impact of climate change in the Asian continent. Prevalent in the literature are articles addressing the occurrence, scale, and duration of floods in Bangladesh, given their significant increase over recent decades^{47,48}. More centred is the study by Hossain B. *et al.* which investigated the effects of floods on the livelihoods of Char Village residents, in Bangladesh, with a specific focus on income and occupation⁴⁹. It delves into the coping mechanisms employed by these individuals in response to flood-related challenges⁵⁰. Food security oriented was the analysis conducted by Roy D. *et al.*, which highlighted the significant progress achieved in Bangladesh in terms of

⁴² Burke, M. B., Miguel, E., Satyanath, S., Dykema, J. A., & Lobell, D. B., "Warming increases the risk of civil war in Africa". *Proceedings of the national Academy of sciences*, 106(49), 2009, pp. 20670-20674.

⁴³ *Ibidem*.

⁴⁴ Sartori, N., & Fattibene, D. "Human security and climate change. Vulnerabilities in the Sahel", 2019.

⁴⁵ Abebe, T. T., "Securitisation of migration in Africa: the case of Agadez in Niger", 2019.

⁴⁶ Zakari, S., *et al.*, "Adaptation strategies to climate change and impacts on household income and food security: Evidence from Sahelian region of Niger", 2022.

⁴⁷ Ali MS, Mahjabin T, Hosoda T., "Impact of climate change on floods of Bangladesh and introducing flood intensity index to characterize the flooding scenario". *Journal of Engineering* 2013.

⁴⁸ Ahmed, A.U. and M.M.Q. Mirza, "Review of causes and dimensions of floods with particular reference to flood'98: national perspectives. *Perspectives on flood*", 1998.

⁴⁹ Hossain, B., Sohel, M. S., & Ryakitimbo, C. M., "Climate change induced extreme flood disaster in Bangladesh: Implications on people's livelihoods in the Char Village and their coping mechanisms", 2020.

⁵⁰ *Ibidem*

food availability, accessibility, and utilization over the past few decades⁵¹. However, the same level of progress has not been observed in terms of food stability in that region⁵². The conclusion of their study emphasizes how Bangladesh continues to face challenges in achieving dietary diversification, resulting in nutritional imbalances⁵³.

Finally, as far as the United States is concerned, very little information has been found in the literature on the correlations between climate change and human security. Rather, the focus has been on the impact of atmospheric variations in various states of Central America. Some have discussed the impacts of climate change on fire regimes and vegetation⁵⁴, while others have evaluated the effects on biodiversity, ecosystems, and their implications for the management of natural resources⁵⁵. Strongly present are studies focusing on mitigation approaches implemented within the United States. For example, Cheng C. *et al.* have recognized green infrastructure as an essential approach for managing stormwater, mitigating flooding, and adapting to climate change⁵⁶. And again, the consumption of renewable energy, advancements in climate change mitigation technology, and global cooperation in the development of green technologies have been proven to play a crucial role in both mitigating and shaping U.S carbon dioxide emissions⁵⁷.

Then, as previously stated, it seems that no study has compared three different countries, in different continents, linking environmental degradation, human security, and adaptation policies with the aim of underlying the substantial differences that characterize those regions and the obstacle that poses to the mitigation of climate change on a global scale.

⁵¹ Roy D, Sarker Dev D, Sheheli Sh “Food Security in Bangladesh: Insight from Available Literature”. 2019.

⁵² *Ibidem*.

⁵³ Roy D, Sarker Dev D, Sheheli Sh “Food Security in Bangladesh: Insight from Available Literature”. 2019.

⁵⁴ Halofsky, J. E., Peterson, D. L., & Harvey, B. J., “Changing wildfire, changing forests: the effects of climate change on fire regimes and vegetation in the Pacific Northwest, USA”. 2020.

⁵⁵ Weiskopf, S. R., *et al.*, “Climate change effects on biodiversity, ecosystems, ecosystem services, and natural resource management in the United States”, 2020.

⁵⁶ Cheng, C., *et al.*, “Assessing climate change-induced flooding mitigation for adaptation in Boston’s Charles River watershed, USA”, 2017.

⁵⁷ Xin, D., Ahmad, M., & Khattak, S. I., “Impact of innovation in climate change mitigation technologies related to chemical industry on carbon dioxide emissions in the United States”, 2022.

METHODOLOGY

The comprehensive and comparative approach employed in this investigation are aligned with the overarching objective of understanding the primary security challenges posed by climate change. It focused on investigating the multifaceted impacts of climate change on human security, particularly examining how environmental variations affect nations differently, emphasizing the varying perceptions and priorities each country attributes to human security within the context of climate change. This work uses an interdisciplinary approach, combining tools and concepts from different disciplines such as environmental science, sociology, economics, politics, and international security.

As emphasized earlier, the attention is centred on exploring responses to two pivotal inquiries: the first regards the multiple ways climate change can affect populations in different areas of the world, therefore harming human security; the second focuses on understanding how these differences increase the “undemocratic” nature of the crisis, influencing climate change resolution.

The nature of this study is fundamentally exploratory, as evidenced by the questions posed. The aim is to investigate the aforementioned inquiries concerning diverse population and countries and their mitigation and adaptation capabilities. The data collection will rely mainly on secondary sources, such as case studies, reports, academic papers, and journal articles. Extensive analysis of current literature, papers, and academic research will enable a full grasp of the historical context, policy frameworks, and growing debate around climate change and human security in each country. The study will use a qualitative content analysis approach to identify major themes, patterns, and trends from the collected data in order to comprehend the various dynamics at work and draw relevant conclusions. The research technique will include comparative analysis, which will allow for the identification of commonalities and differences in how climate change affects human security across the selected countries. Furthermore, the analysis is underpinned by diverse indicators and databases, which measure the level and trajectory of socioeconomic development, political stability, governance strength, vulnerability to climate change impacts, and assessments of national and regional security challenges.

In order to delve into the analysis, the research relies on a curated selection of three country case studies: the United States of America, Niger, and Bangladesh. Adopting a case study approach enables to closely examine the distinct circumstances present in the countries under investigation. The rationale behind the case selection is guided by their unique positioning

within the spectrum of climate change vulnerability, socio-economic conditions, and governmental approaches to human security. The aim was to consider a wide geographical representation to encompass distinct regional. To this extent, the analysis includes continents that differ in terms of environmental catastrophes, as well as different levels of Human Development Index, levels of GHG emissions, fragility, legitimacy, adaptation, and mitigation capacity.

Indeed, the United States represents a major case due to its dominant global role, advanced economy, and evolving approach to climate-related security, often intertwined with national and military security considerations. As a country grappling with diverse human security challenges, including food security and population health, Niger offers valuable insights into how human security is perceived in a broader context. Finally, Bangladesh serves as a pivotal case study due to its extreme vulnerability to climate change impacts. Here, the concept of human security has predominantly revolved around the environmental threat related to that of displacement.

The study will use a human security paradigm that considers the seven components of human security: economic, food, health, environmental, personal, community, and political security. Each factor will be evaluated in order to determine the direct and indirect effects of climate change on the security of individuals and communities. It intends to contribute to the persistent debate about climate change mitigation and the critical need for global cooperation and equitable solutions by investigating the “undemocratic” nature of the climate catastrophe. Findings will provide insights into the challenges and opportunities associated with resolving climate-related human security concerns in a world defined by territorial boundaries and power imbalances.

Lastly, it is critical to recognize the research’s potential limitations. While the chosen case studies are representative, they do not necessarily cover the full range of climate change consequences on human security globally.

CHAPTER I

Debating the environmental risk as the greatest global security concern

1.1 The climate vocabulary

With the introduction of climate change and its effects on both the planet and its people, it is necessary clarifying the terminology in this field. There is often confusion between concepts, which are then used as synonyms. Some of these include the overlap between climate change and global warming, climate variability or environmental change. All these phenomena are closely related to each other; however, it proves important to discern these concepts as they represent different aspects of the global environmental crisis.

A first definition of “climate change” is provided by the United Nations Framework Convention on Climate Change (UNFCCC). It refers to any change in climate, directly or indirectly related to human activity, that could change the composition of the global atmosphere⁵⁸. Those alterations are additional to natural climate variability that occur during corresponding time periods⁵⁹. This working definition generically refers to atmosphere alterations caused by fluctuations in weather conditions that include temperature variations as well as changes in precipitation and wind patterns⁶⁰. Contrary, the often mentioned “global warming” only refers to the average temperature increase of the Earth’s surface⁶¹. This occurs as the rise of greenhouse gases concentration incorporates solar radiation, trapping more heat and resulting in excessive warming⁶². Accordingly, it proves incorrect to use the two terms equally, given that global warming represents only one part of climate change.

On a similar note, it is possible to isolate climate change from climate variability. The latter still represents a change in the average patter of climate events, thought it refers to fluctuations that happen on a shorter-term and that are exclusively the result of natural causes⁶³. For example, volcanic eruptions, natural cyclical shifts in air and ocean circulation may contribute

⁵⁸ United Nations Framework Convention on Climate Change (UNFCCC). Art 1. “Definitions”, 1992.

⁵⁹ *Ibidem*.

⁶⁰ United Nations, “What Is Climate Change”, Climate action, 2022.

⁶¹ United Nations Development Programme (UNDP). “The Climate Dictionary: An everyday guide to climate change”, Global warming vs. Climate change, 2023.

⁶² *Ibidem*.

⁶³ Savitsky, R., “Climate variability vs. climate change: What’s the difference?” Verisk Analytics, Inc., 2017.

to climate variability⁶⁴. Climate change instead concerns long-term changes of the Planet that are mainly human induced⁶⁵.

Furthermore, while climate change only refers to alterations in the atmosphere, environmental change includes all the processes that affect the environment as a whole⁶⁶. It implies every variation that is also biological and geological and not only related to atmospheric changes⁶⁷. In this sense, as climate is a portion of the environment, one may define climate change as a subcategory of environmental change⁶⁸. Sometimes it is difficult to clearly define boundaries; the correlation between these terms lies on the fact that climate change influences the environment on a global scale. Consequently, in this setting, reference is made to the more extensive “environmental risk” when debating on the greatest global security concern since a multiplicity of aspects are considered, including the social, economic, political, and humanitarian dimensions.

The separation provided at this time is necessary since solving environmental difficulties requires targeted policies and strategies that consider each problem precisely. For example, reducing greenhouse gas emissions is essential to address climate change, while protecting natural habitats is crucial to preserve biodiversity and ecosystems. Distinguishing between these phenomena can help raise awareness on environmental problems, motivate actions for change as well as deepen environmental security. Still, all of these concepts will be mentioned throughout the text as they are crucial in addressing environmental challenges and their potential impact on global security.

1.2 The interconnection between climate change and security

Concerns about the security-climate link have steadily advanced into national and international policy debates⁶⁹. Conflicts, natural disasters, the spread of pandemics, and the ongoing economic crisis have prompted reflection on a new way of declining the concept of security. Today it is no longer interpreted from a geostrategic perspective, but from a “multi-faceted” one⁷⁰. Going beyond the physical security of people and property, new factors come into play

⁶⁴ Center for science education. “Climate variability”, 2023.

⁶⁵ Savitsky, R., “Climate variability vs. climate change: What’s the difference?” Verisk Analytics, Inc., 2017.

⁶⁶ Strom, C., “Difference Between Climate Change and Environmental Change”. Difference Between Similar Terms and Objects, Differencebetween.net, 2020.

⁶⁷ *Ibidem*.

⁶⁸ *Ibidem*.

⁶⁹ Sweijs, T., De Haan, M., Van Manen, H., “Unpacking the Climate Security Nexus. Seven Pathologies Linking Climate Change to Violent Conflict”, The Hague Centre for Strategic Studies, 2022.

⁷⁰ Centro Studi Politica Internazionale, “Cambiamenti climatici e governance della sicurezza: la rilevanza politica della nuova agenda internazionale”, 2010.

in the attempt to define security from a global perspective. These aspects now include the environment, scarcity, and difficulty of access resources, population movements, as well as the issue of conflict and human rights⁷¹. Climate trends will most likely contribute to the new complexity of the security framework and will need to be addressed with a comprehensive and holistic strategy⁷². Hence, the development of the concepts of climate and environmental security. From the one hand, climate security clearly describes security risks and challenges arising from climate change and its impacts. It is concerned with national and international security implications of global warming and changing in climate patterns, such as geopolitical tensions, migration, displacement, and natural disasters. On the other hand, environmental security has a broader scope and encompasses a range of environmental risks and challenges beyond just climate change. It refers to the protection of ecosystems, natural resources, and the overall environment to ensure human well-being and sustainable development. It concerns biodiversity conservation, water and food security, pollution, and health. Today, both concepts are crucial for dealing with global security threats.

Then, the need for coordination among previously unrelated international agendas has gained more attention given how closely linked climate change, disaster risk, economic development, biodiversity conservation, and human well-being are⁷³. This interrelation will affect national and international relations and policies, bringing different key actors, like the United Nations, the European Union, the North Atlantic Treaty Organization, and the Intergovernmental Panel on Climate Change, to stress the threat to stability and security that the crisis implies⁷⁴. Indeed, the increase ways in which this link can be conceptualized has emphasized the idea of environmental change as the major security issue in contemporary global politics⁷⁵.

1.3 The environmental crisis: from minor concern to global security threat

Even if environmental change has become a severe topic in most recent years, Earth climate has never simply remained unchanged. Its variations have always been a reality. Alteration in the quality of solar energy as well as the movement of glaciers have long represented natural consequences of the solar cycle of the Earth⁷⁶. Yet, current events related to climate change

⁷¹ Centro Studi Politica Internazionale, “Cambiamenti climatici e governance della sicurezza: la rilevanza politica della nuova agenda internazionale”, 2010.

⁷² IPCC, “Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change”, Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 2021.

⁷³ *Ibidem*

⁷⁴ Rüttinger, L., *et al.*, “A New Climate For Peace. Taking Action on Climate and Fragility Risks”, 2015.

⁷⁵ McDonald, M., “Human security and the construction of security”, *Global Society*, 16.3, 2002, pp. 277-295.

⁷⁶ NASA, “The Causes of Climate Change”, Human activities are driving the global warming trend observed since the mid-20th century, 2023.

cannot be associated with the Sun⁷⁷. To date, the effects of human activities have proven to be the most harmful ones, driving the world toward a point of no return. The influence that humans have on the planet represents the main driver of the variation in the atmosphere, biosphere, cryosphere, and the ocean⁷⁸. Indeed, 97% of scientists attribute global warming to human activities⁷⁹ as industrialization and the use of fossil fuels are causing a massive increase in greenhouse gas emissions excessively warming the planet⁸⁰.

Regardless of the unequivocal warming of the Earth⁸¹, climate change has for long been considered a minor concern. The first global response to climate change dates back to 1988 when the Intergovernmental Panel on Climate Change (IPCC), the central international body for assessing climate change, was founded. The IPCC was established to provide the world with a clear and scientifically based view of the current state of knowledge on climate change and its potential environmental and socioeconomic impacts⁸². The IPCC First Assessment Report offered the scientific support for the establishment of the UNFCCC at the 1992 Rio de Janeiro Conference⁸³. The increase in climate events from the 2000s have begun to alter the belief of climate change has as a slow phenomenon whose scenarios still appeared distant, confirming the nonlinearity of the global climate system as an accelerating factor of climate change as well as an amplifier of extreme events⁸⁴. As a matter of fact, weather phenomena have become always more frequent and powerful, causing disruption even in parts of the world that experienced moderate weather conditions until now. *Table 1* lists different types of natural disasters demonstrating how they have intensified over time. Comparing intervals from 1980 to 1999 and from 2000 to 2019, there has been almost a doubling of these events. Floods and storms do not go unnoticed with the two highest percentage of occurrences, respectively 44% and 28%⁸⁵. This trend continued to grow since the COVID-19 crisis, which effects have led to an increase in the risk of extreme weather events by an additional 22.7%⁸⁶.

⁷⁷ NASA, “The Causes of Climate Change”, Human activities are driving the global warming trend observed since the mid-20th century, 2023.

⁷⁸ IPCC, “Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change”, Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 2021.

⁷⁹ NASA, “Do scientists agree on climate change?”, 2023.

⁸⁰ NASA, “The Causes of Climate Change”, Human activities are driving the global warming trend observed since the mid-20th century, 2023.

⁸¹ IPCC, “Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change”. Cambridge University Press, 2013.

⁸² IPCC, “Che cos’è l’IPCC”, 2023.

⁸³ IPCC, “Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change”, Cambridge University Press, 2021.

⁸⁴ Clemente, S., “Comunicare la complessità. I cambiamenti climatici tra eventi estremi e migrazioni”, 2022.

⁸⁵ United Nations Office for Disasters Risk Reduction (UNDRR), “Total disaster events by type: 1980-1999 vs. 2000-2019. An overview of the last 20 years”. Chap.1. 2020.

⁸⁶ World Economic Forum, “The Global Risks Report 2022”, 17th Edition, 2022.

Table 1 – Total disaster events by type: 1980-1999 vs. 2000-2019

| Natural disasters | Total disasters (1980-1999) | Total disasters (2000-2019) | Percentage of occurrences of disasters (2000-2019) |
|----------------------------|-----------------------------|-----------------------------|--|
| Flood | 1389 | 3254 | 44 |
| Storm | 1457 | 2043 | 28 |
| Earthquake | 445 | 552 | 8 |
| Extreme temperature | 130 | 432 | 6 |
| Landslide | 254 | 376 | 5 |
| Drought | 263 | 338 | 5 |
| Wildfire | 163 | 238 | 3 |
| Volcanic activity | 84 | 102 | 1 |
| Mass movement | 27 | 13 | >1 |
| Total | 4212 | 7348 | 100 |

Source: Data obtained from UN Office for Disaster Risk Reduction Report “Human cost of disaster”, 2020.

Then, the earliest discussions about the climate-security nexus went hand in hand with the persisting and noticeable reduction of glaciers, rising sea levels, and increased violent weather events.

1.3.1. A/64/350 UN General Assembly - Security Council Report

Considering this change in scenario, it was in 2007 that the United Nations Security Council has held the first debate on the implications of climate change on international security. Specifically, it was in 2009 that the United Nations General Assembly presented the Resolution on “Climate Change and its Possible Security Implications” identifying five dimensions through which climate change may affect security. This Report correspond to the first truly detailed analysis of the potential link between those two elements. Initially, they highlighted the dangers of climate change in terms of vulnerability, both of food security and human health, as more people would be exposed to extreme weather events⁸⁷. Next, the Report discussed development; should climate change cause a slowdown or reversal in the development process, this will further aggravate vulnerability and could jeopardize the ability of States to preserve stability⁸⁸. Additional analysis regards States capacity to cope with climate consequences. Households and communities may be forced to migrate, compete for natural resources, or rely on other coping strategies that could lead to internal conflicts and have global repercussions⁸⁹.

⁸⁷ UN General Assembly, “Climate change and its possible security implications”. Report of the Secretary-General, New York, A/64/350, September 2009.

⁸⁸ *Ibidem*.

⁸⁹ *Ibidem*.

The fourth dimension is that of statelessness as a result of statehood loss. In the case of territory dissolution, there might be negative outcomes on security, rights, and sovereignty⁹⁰. Ultimately, the last dimension concerned the possible implications on conflict and cooperation over international shared and unconstrained resources⁹¹.

1.3.2. The Paris Agreement

The rising concern has brought the international community to perceive climate change as a potential risk to international security and global stability. With this acknowledgement, several countries in the international arena committed to turn the tide on climate change. With the assistance of the IPCC Fourth and Fifth Assessment Report, the first concrete action was taken with the adoption of The Paris Agreement in 2015 at the UN Climate Change Conference (COP21). The primary goal of the this legally binding international treaty, still in the process of being achieved, is to gradually reduce the release of carbon dioxide (CO₂) and other greenhouse gas (GHG) emissions over the next decades in order to limit the rise of global warming well below 2 degrees Celsius compared to the pre-industrial period⁹². Likewise, they aim for a maximum temperature increase of 1.5 degrees Celsius above pre-industrial period⁹³. To attain this goal, an increasing number of countries among the EU, UN, and NATO, have committed to eliminating GHG emissions by 2050 or 2060⁹⁴. The Agreement requires Parties to commit to a long-term reduction of their greenhouse gas emissions and to communicate the mitigation approaches they intend to implement in their Nationally Determined Contributions (NDCs)⁹⁵. They are required to stand by them and obliged to report their contributions every 5 years⁹⁶. The commitment implemented by the 196 Parties who signed the Agreement shows awareness regarding the imminence of climate change, thereby the need to embrace it as a global issue.

1.3.3. European Union climate transition

The intricate interconnection among environmental degradation, climate change, and international security has been intensifying within the European Union foreign and security

⁹⁰ UN General Assembly, “Climate change and its possible security implications”. Report of the Secretary-General, New York, A/64/350, September 2009.

⁹¹ *Ibidem*.

⁹² Paris Agreement, in UNFCCC, COP Report No. 21, *Addendum*, at 21, art. 4. U.N. Doc. FCCC/CP/2015/10/Add.1, 29 January 2016.

⁹³ *Ibid.*

⁹⁴ Oberthür, S., et al., “European Foreign Policy in a Decarbonising World: Challenges and Opportunities”. Taylor & Francis, 2022.

⁹⁵ Paris Agreement, in UNFCCC, COP Report No. 21, *Addendum*, at 21, art. 4. U.N. Doc. FCCC/CP/2015/10/Add.1, 29 January 2016.

⁹⁶ *Ibidem*.

policy framework. Notably, the EU acknowledged the security implications of climate change from the early 2000s, while implementing the 1997 Kyoto Protocol⁹⁷. Since then, the European Union has been one of the most active proponents of the need to address climate-related security issues, significantly developing climate policies to initiate the European climate transition⁹⁸.

The first project focusing on the influence of climate change on matters of international security started in 2007 when the European Council invited the High Representative and the European Commission to deliver a collective report to the European Council in the Spring of 2008 addressing international security threats, created by climate change, as part of preventive security policy⁹⁹. Then again, the formulation of the 2016 EU Global Strategy stressed the necessity to further expand EU capacities regarding climate change and security¹⁰⁰. It referred to it as a contributing factor exacerbating the likelihood of conflicts, primarily concerning critical aspects such as water and food security¹⁰¹. Most recent action was taken in 2019 when the European Commission launched the European Green Deal. The Green Deal incorporates the specific objective of establishing the EU as a prominent global leader in addressing climate change¹⁰². This is achieved through a series of essential priorities outlined within the Deal. Firstly, it underscores the need for constant efforts under the Paris Agreement, meaning to minimize GHG emissions by 55% by 2030 and to reach climate neutrality, that is to say net zero emissions, by 2050; secondly, it emphasizes the importance of engaging with international partners both bilaterally and in regional contexts; thirdly, the Deal advocates for a more environmentally friendly trade policy; and, lastly, it aims at enhancing coordination with the international financial system¹⁰³. In doing so, the European Green Deal explicitly acknowledges

⁹⁷ The Kyoto Protocol, adopted on 11 December 1997, underwent a complex ratification process before becoming effective on 16 February 2005. As of now, it boasts 192 Parties. Its primary objective is to operationalize the United Nations Framework Convention on Climate Change by mandating industrialized nations and transitioning economies to curtail and diminish greenhouse gas (GHG) emissions based on individually agreed targets. In contrast, the Convention solely urges those nations to implement mitigation policies and measures while periodically reporting on their progress. In: UNFCCC, “What is the Kyoto Protocol?”, 2023.

⁹⁸ The climate transition represents a multifaceted and pervasive challenge for economies and societies worldwide. It permeates various vital sectoral systems, encompassing transport, buildings, power, industry, agriculture, forestry, finance, and more. These sectors consist of complex networks of actors, technologies, infrastructures, economic structures, institutions, and ideologies, collectively engendering resistance to change. In: Geels, F.W. and Schot, J., “The dynamics of transitions: A socio-technical perspective”. (eds.) *Transitions to sustainable development: New directions in the study of long-term transformative change*. New York and London: Routledge, 2010, pp. 11–104.

⁹⁹ European Commission, “Climate Change and International Security. Paper from the High Representative and the European Commission to the European Council”. 14.03.2008, S113/08.

¹⁰⁰ referred to as a contributing factor that exacerbates the likelihood of conflicts, primarily concerning critical aspects such as water and food security.

¹⁰¹ European Union, “Global Strategy for the European Union’s foreign and security policy”, Jun. 2016; European Union, “Remarks by High Representative/Vice-President Federica Mogherini at the press conference following the Informal Meeting of EU Defence Ministers” Aug. 2019.

¹⁰² European Commission, “The European Green Deal”, 11.12.2019, COM(2019) 640 final.

¹⁰³ *Ibidem*.

the role of climate change and environmental challenges as significant contributors to the amplification of threats and a source of instability. Indeed, the implementations made by the EU have shown how the Union firmly placed climate change as a crucial factor in shaping its foreign policy and security agenda, recognizing the urgency of collective action to address the challenges posed by a changing climate¹⁰⁴. Nevertheless, climate security should be perceived as a combination of diverse policy domains interlinked by EU objectives to improve its ability to address and, ultimately, avert security risks associated with climate change¹⁰⁵.

1.3.4 The challenging implementation of the climate agenda

In spite of the growing recognition and awareness by the international community, efforts to date did not reach the expected, or even satisfactory, results. The barriers in achieving the targets derive from the absence of a common global mitigation strategy toward climate change, a weak international cooperation, the inconsistency in applying climate policies and, certainly, the many difficulties faced by international players in recent years.

An emblematic illustration of the contradictory way in which the climate crisis is being addressed is represented by the United States course of action *vis-à-vis* environmental policies. The United States withdrawal from the Paris Agreement during Donald Trump's presidency has had noticeable effect on the united front balance that the crisis requires. Not only, being the U.S. the second country in the world for annual CO₂ emissions from fossil fuels and industry¹⁰⁶, their actions did not go unnoticed; a key lever for business and civil society was missing in the battle against climate change. Afterwards, changes and progresses have been made by the new U.S. presidency, which has recognized the importance of climate change mitigation and the danger it poses to the American population and to people around the world. By bringing the U.S. back into the Agreement, Joe Biden redefined the Country's plan of action asserting, in the 2022 National Security Strategy, climate security as a matter of national security and one of the U.S. global priorities¹⁰⁷.

Similarly, despite climate change being included in the security agendas of both the European Union and NATO for several years, its practical implementation often remains relegated to a marginal role. While the European Union benefits from a favourable position, in comparison to

¹⁰⁴ Oberthür, S., et al., "European Foreign Policy in a Decarbonising World: Challenges and Opportunities". Taylor & Francis, 2022.

¹⁰⁵ Bremberg, N., "EU foreign and security policy on climate-related security risks", 2019.

¹⁰⁶ Our World in Data, "Annual CO₂ emissions. Carbon dioxide (CO₂) emissions from fossil fuels and industry. Land use change is not included".

¹⁰⁷ Biden, J. R., "Biden-Harris White House National Security Strategy, October 2022." Collections 2022, 2022, pp. 10-12.

numerous other international and regional organizations, achieving effective coordination of EU external actions remains a persistent challenge¹⁰⁸. To enhance the efficacy of EU actions, EU member states should invest on finding consensus on a predefined set of priorities for climate security¹⁰⁹. Even if the EU already possesses a good number of instruments and tools to respond to climate-related risks, there remains the necessity for both the EU and its member states to elevate their ambitions¹¹⁰. Also, efficient management of climate-related security risks heavily relies on a strong international cooperation, making it imperative to further strengthen EU and UN collaboration in this domain¹¹¹, as well as EU and NATO cooperation. For this reason, the latest meeting that was held June 21st in Brussels between the High Representative of the Union for Foreign Policy and Security Policy and Vice-President of the European Commission, Josep Borrell, the NATO Secretary General, Jens Stoltenberg, the U.S. Special Presidential Envoy for Climate, John Kerry, and the Executive Vice-President of the European Commission, Frans Timmermans, seems to have been the opportunity to strengthen this cooperation intensifying the dialogue on climate change and security also in view of the next UNCCC (COP28) in Dubai¹¹².

Furthermore, the number of challenges encountered by the international community in the last few years have shown interference to the fulfilment of the climate agenda, first and foremost the pandemic. The COVID-19 crisis severely increased a variety of risks with global relevance. In this setting, the most relevant ones are “climate action failure” and “extreme weather”, which improved by 25.4% and 22.7% respectively, together with “biodiversity loss”, increased by 8.4%, as depicted in the graph hereunder (*Graph 1*)¹¹³. The reason for this increase is given by the fact that several countries, in an attempt to restore their economies, favoured short-term measures regardless of their effect on the environment¹¹⁴. These actions have done more than a little to affect the goals previously stated by the Paris Agreement. As Parties confirmed in November 2022 during the Sharm el-Sheikh COP 27, emissions need to be reduced by 43%,

¹⁰⁸ Bremberg, N., “EU foreign and security policy on climate-related security risks”, 2019.

¹⁰⁹ *Ibidem*.

¹¹⁰ *Ibidem*.

¹¹¹ *Ibidem*.

¹¹² NATO, “Press Statement on Climate and Security”. 2023.

¹¹³ World Economic Forum, “Global Risks Perception Survey 2021-2022. Risks that worsened the most since the start of the COVID-19 crisis”, 2022.

¹¹⁴ Biden, J. R., “Biden-Harris White House National Security Strategy, October 2022.” Collections 2022, 2022.

compared to 2019, in order to achieve the objective of a maximum temperature increase of 1.5°C by 2030¹¹⁵.

Graph 1 – Risks that worsened the most since the start of the COVID-19



Risk categories ■ Economic ■ Geopolitical ■ Environmental ■ Societal ■ Technological

Source: Data obtained from Global Risks Report 2022 by World Economic Forum Global Risks Perception Survey 2021-2022.

¹¹⁵ Statement by Simon Stiell, UN Climate Change Executive Secretary, on the IPCC’s Synthesis Report of the Sixth Assessment Report, 20 March 2023.

As for the findings of the IPCC, there is a 50% probability of attaining this target¹¹⁶. Current expectations indicate a potential increase of 2.7°C by 2050¹¹⁷, significantly surpassing the objectives delineated in the Paris Agreement.

In this regard, environmental risks are today perceived as the greatest threats the world will face between now the next decade, potentially being the most harmful ones to people and the Planet¹¹⁸. “Natural disasters and extreme weather events” are considered to be the most severe risks over the next two years together with “failure to mitigate climate change”, also identified as the risk for which the world is least prepared (Table 2)¹¹⁹. In conjunction with “failure of climate-change adaption” and “biodiversity loss and ecosystem collapse”, they are all perceived as the topmost significant long-term threats in the next ten years¹²⁰.

Table 2 – Global risks ranked by severity over the short and long term

| 2 years | 10 years |
|--|--|
| 1 Cost-of-living crisis | 1 Failure to mitigate climate change |
| 2 Natural disasters and extreme weather events | 2 Failure of climate-change adaption |
| 3 Geoeconomic confrontation | 3 Natural disasters and extreme weather events |
| 4 Failure to mitigate climate change | 4 Biodiversity loss and ecosystem collapse |
| 5 Erosion of social cohesion and societal polarization | 5 Large-scale involuntary migration |
| 6 Large-scale environmental damage incidents | 6 Natural resource crises |
| 7 Failure of climate change adaptation | 7 Erosion of social cohesion and societal polarization |
| 8 Widespread cybercrime and cyber insecurity | 8 Widespread cybercrime and cyber insecurity |
| 9 Natural resource crises | 9 Geoeconomic confrontation |
| 10 Large-scale involuntary migration | 10 Large-scale environmental damage incidents |

Risk categories ■ Economic ■ Geopolitical ■ Environmental ■ Societal ■ Technological

Source: Data obtained from Global Risks Report 2023 by World Economic Forum Global Risks Perception Survey 2022-2023.

¹¹⁶ IPCC, “Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change”, Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 2021.
¹¹⁷ James, D., and Bailey, R., “Missing the Mark”, Oliver Wyman & CDP, 2022.
¹¹⁸ World Economic Forum, “The Global Risks Report 2023”, 18th Edition, 2023.
¹¹⁹ *Ibidem*.
¹²⁰ *Ibidem*.

In the absence of substantial policy changes or investments, the consequences of climate change will intensify obstructing climate mitigation efforts and disrupting livelihoods in climate-vulnerable economies, disproportionately affecting low- and middle-income countries¹²¹.

Therefore, in an attempt to achieve the estimated targets, not only climate mitigation actions must be massively increased but, most importantly, the international community needs to find a united course of action. There is no more time to be wasted not only because Earth degradation has escalated, but also because the threat has now shifted; as human activities have been influencing the environment, the latter has begun to have an impact on people and started being perceived as the “gravest threat to humanity”¹²². Until a few years ago, environmental repercussions were hardly visible; today their consequences on people, countries and international relations are clearly evident. The discernible shift in awareness and acknowledgment of the security implications of climate change, as well as the necessity of transitioning towards a more comprehensive and robust implementation of climate security practices, has animated a shared feeling of urgency among nations and other key actors.

In an attempt to investigate such threat, the following section aims at examining the direct and indirect consequences of climate change on people and on the conceptualization of human security. This discussion appears necessary to understand the intensity by which natural outcomes effect different populations in different ways.

¹²¹ World Economic Forum, “The Global Risks Report 2023”, 18th Edition, 2023.

¹²² World Economic Forum, “The Global Risks Report 2022”, 17th Edition, 2022.

CHAPTER II

Human security facing the environmental crisis: unravelling consequences on individuals and communities

2.1 Human security and its contemporary realities

The essence and objective of security stand in protecting human beings. Its reinforcement is then achieved by further prioritizing the human dimension. Interest toward human security has been the leading subject of contemporary development agendas, driven by an era of global transformations deeply influencing individuals' fundamental capabilities. Portraying environmental change as a matter of human security amplifies the importance attributed to the issue, accentuating its significance¹²³. Governments, intergovernmental institutions, and nongovernmental organizations apply this concept as a spectrum of security norms¹²⁴. Moreover, it is used as a tool to structure policies and make informed decisions concerning development, environment, health, peace, conflict, and human migration¹²⁵.

Human security addresses the intrinsic aspirations of every human being, revolving around the principles of “freedom from want, freedom from fear, and freedom to live with dignity”¹²⁶. Indeed, following its introduction by the United Nations in the 1994 Human Development Report, the preliminary perspective of these concept showed a fundamental shift from national-level protection to prioritizing individual well-being and safety, making human security “people-centred”¹²⁷. This new prospective helped implement more effective and tangible upgrades in people's daily lives¹²⁸. The improvement of human security conditions is contingent upon the full realisation of individuals' dignity, human rights, and fundamental freedoms, tied also to economic development, social inclusion, education, and efforts to fight poverty, illness, and starvation¹²⁹.

¹²³ Floyd R., “Security and the Environment: Securitisation Theory and US Environmental Security Policy”, New York: Cambridge University Press, 2010.

¹²⁴ *Ibidem*.

¹²⁵ *Ibidem*.

¹²⁶ United Nations Development Programme (UNDP), “Human Development Report 1994”, Oxford University Press, New York, N.Y, 1994.

¹²⁷ UNDP, “Human Development Report 1994”, 1994.

¹²⁸ UN General Assembly, “Follow-up to General Assembly resolution 66/290 on human security”, Report of the Secretary-General, A/68/685, December 2013.

¹²⁹ *Ibidem*.

The definition has been intentionally designed to adapt to multiple contexts, evolve over time and highlight it as an integrative concept¹³⁰. The perception of what is deemed essential, and so what holds the core of life's significance, differs among individuals and societies¹³¹. This divergence underscores the necessity for the concept of human security to remain adaptable and responsive¹³².

Today, the dynamic nature of the notion is stressed as it includes a new generation of interconnected risks; conflicts, pandemics, inequalities, digital threats, and environmental challenges are profoundly reshaping the landscape of sustainable human development¹³³. In this sense, even though human development and human security are two separate concepts, as the former refers to the extension of individuals' choices and the latter regards their ability to exercise those choices safely and freely, they are linked to one another¹³⁴. The advancement, or regression, in one domain amplifies the prospects of progress, or failure, in the other¹³⁵. Current circumstances are increasingly limiting the number of possibilities and opportunities offered to individuals. Among them, climate change is confirmed to be the first threat to humankind, ever tangible and growing. At support of this claim there are, for example, the distressing projections that about 40 million people worldwide will be at risk of death between 2020 and 2100 due to rising temperatures¹³⁶. These estimations, which will be further analysed, account for existing levels of adaptation capabilities, which are widely acknowledged as inadequate¹³⁷.

In the attempt to mitigate the effects of climate change on populations, it is crucial to consider the universal and multidimensional nature of human security. This way, it will be possible to develop a systemic approach that will guarantee all people the freedom to live¹³⁸. By placing people at the core of this analysis, human security has been progressively adopted as a perspective through which comprehend and address the human aspects of worldwide environmental transformations.

¹³⁰ UNDP, "Human Development Report 1994", 1994.

¹³¹ United Nations Development Programme (UNDP), "New threats to human security in the Anthropocene Demanding greater solidarity", Special Report 2022, 2022.

¹³² UNDP, "New threats to human security in the Anthropocene Demanding greater solidarity", 2022.

¹³³ *Ibidem*.

¹³⁴ UNDP, "Human Development Report 1994", 1994.

¹³⁵ *Ibidem*.

¹³⁶ UNDP, "New threats to human security in the Anthropocene Demanding greater solidarity", 2022.

¹³⁷ Carleton *et al.*, "Valuing the Global Mortality Consequences of Climate Change Accounting for Adaptation Costs and Benefits", 2020.

¹³⁸ UNDP, "New threats to human security in the Anthropocene Demanding greater solidarity", 2022.

2.2 Categories ensuring individuals' safety

Since the early debate, human security has been recognised and delineated on the basis of seven dimensions¹³⁹:

- i. economic security, which requires a guarantee minimum income;
- ii. food security, the physical and economic need to access basic food;
- iii. health security, referring to the assurance of physical and mental well-being for individuals and communities;
- iv. environmental security, relying on a healthy physical environment;
- v. personal security, mainly from physical violence;
- vi. political security, regarding the respect of basic human rights in a society;
- vii. community security, found within a group identity.

These dimensions collectively contribute to the comprehensive concept of human security. It seeks to address the wide range of threats and vulnerabilities individuals and communities may face in their pursuit of well-being and dignity. These categories are now so strongly influenced by climate change that they can be used to highlight divergences between countries. Indeed, while there is an asymmetry in the allocation of costs and benefits among nations, no country remains exempt from the ramifications concerning human security¹⁴⁰. Each factor will then be assessed to determine the effects of climate change on the safety of individuals.

2.2.1 Economic Security

Current events have been affecting overall economic productivity, reverberating into aspects of human security related to income, employment, and economic prospects¹⁴¹. Climate change, natural calamities, and pollution have not only reduced individuals' capacity to lead healthy and informed lives but have also disrupted the basic elements of economic production¹⁴². Indeed, there is the possibility of overall reduction of labour productivity due to potential disasters¹⁴³. For example, short-term fluctuations in temperature can harmfully affect cognitive functioning¹⁴⁴. Exposure to elevated temperatures during the early stages of life can yield lasting effects on educational achievements and earnings potential¹⁴⁵. Childhood exposure to

¹³⁹ UNDP, "Human Development Report 1994", 1994.

¹⁴⁰ UNDP, "New threats to human security in the Anthropocene Demanding greater solidarity", 2022.

¹⁴¹ European Commission, Directorate-General for Climate Action, "Climate change. Consequences of climate change", Climate action, 2023.

¹⁴² UNDP, "New threats to human security in the Anthropocene Demanding greater solidarity", 2022.

¹⁴³ *Ibidem*.

¹⁴⁴ Zivin, J. G., Hsiang, S. M., and Neidell, M., "Temperature and Human Capital in the Short and Long Run." *Journal of the Association of Environmental and Resource Economists* 5(1), 2018.

¹⁴⁵ Fishman, R., *et al.*, "Long term Impacts of Exposure to High Temperatures on Human Capital and Economic Productivity." *Journal of Environmental Economics and Management* 93: 221–238, 2019.

pollution has been associated with diminished educational performance and enduring declines in human capital¹⁴⁶.

The risk of river flooding, land degradation and soil erosion may also affect business and infrastructures¹⁴⁷. Together with precipitations and violent storms, those side-effects will destroy critical infrastructures given their designed and location¹⁴⁸. Hydropower plants, transportation lines, and water supply networks will be shattered, disrupting the delivery of essential services¹⁴⁹. All together, they will certainly damage countries' economies by exacerbating social inequalities, creating economically precarious situations for most vulnerable populations, and affecting businesses and biodiversity by altering the natural services and goods they provide¹⁵⁰.

Moreover, climate change is exerting further influence on economic productivity by generating distinct requirements for physical capital, notably within the energy sector¹⁵¹. Energy generation and consumption contribute to a significant amount of greenhouse gas emissions and poorer nations will definitely face several challenges in the attempt to implement their energy transition¹⁵². They will also strive to enhance their productive capabilities for human development expansion¹⁵³. Within a high-emissions scenario until 2100, the annual rise in electricity consumption attributed to climate change is projected to be 1.8 percent in the European Union and 2.7 percent in the United States, while this percentage is anticipated to surpass 2.000 percent in Nigeria¹⁵⁴. Given this pronounced asymmetry, the process of simultaneously advancing human development and mitigating environmental impacts will prove to be a more intricate effort for developing nations¹⁵⁵.

2.2.2 Food security

Shifts in temperature and precipitation patterns have brought changes in land fertility and agricultural productivity¹⁵⁶. The intensified occurrence of frequent extreme events, as well as

¹⁴⁶ Bharadwaj, P., *et al.*, "Gray Matters: Fetal Pollution Exposure and Human Capital Formation." *Journal of the Association of Environmental and Resource Economists* 4(2), 2017.

¹⁴⁷ European Commission, Directorate-General for Climate Action, "Climate change. Consequences of climate change", Climate action, 2023.

¹⁴⁸ *Ibidem.*

¹⁴⁹ *Ibidem.*

¹⁵⁰ UNEP, *From Conflict to Peacebuilding. The Role of Natural Resources and the Environment*, Nairobi, 2009.

¹⁵¹ UNDP, "New threats to human security in the Anthropocene Demanding greater solidarity", p. 58, 2022.

¹⁵² *Ibidem.*

¹⁵³ *Ibidem.*

¹⁵⁴ Rode, A., *et al.*, "Estimating a Social Cost of Carbon for Global Energy Consumption." *Nature* 598(7880), pp. 308–314, 2021b.

¹⁵⁵ UNDP, "New threats to human security in the Anthropocene Demanding greater solidarity", 2022.

¹⁵⁶ European Commission, Directorate-General for Climate Action, "Climate change. Consequences of climate change", Climate action, 2023.

the increase in temperatures, jeopardizes not only cultivation and distribution of food but also the livelihoods of numerous individuals reliant on agricultural activities¹⁵⁷. Alterations in environmental conditions do not solely dictate access to and consumption of food, they are rooted in a multifaceted interplay of environmental and societal elements¹⁵⁸. These dynamics might escalate over time distressing the right to food¹⁵⁹.

The impact of climate change on crop cultivation is evident through an average annual decline of 1 percent in consumable food calorie output from the world's top 10 crops¹⁶⁰. Farmers in arid regions are disproportionately affected by climate fluctuations due to their heavy reliance on rainfed agricultural practices¹⁶¹. This is intensified by excessive rainfall exacerbating pre-existing drought conditions or resulting in flooding in certain areas¹⁶².

The diminishing variety of crops is also leading to a reduction in agrobiodiversity, which in turn significantly impacts food security and the capacity to withstand disasters¹⁶³. This reduction worsens the exposure to extreme temperatures, weather events, diseases, pathogens, and crop inadequacies¹⁶⁴. Additionally, climate change is instigating substantial transformations within oceans, including elevated surface temperatures, acidification, and rising sea levels¹⁶⁵. Nations heavily reliant on fisheries for protein consumption and employment are particularly susceptible to these looming threats¹⁶⁶.

2.2.3 Health Security

Climate change is also capable of causing a range of health problems, such as heart, respiratory, and infectious diseases¹⁶⁷. The temperature increase by 2 °C or more will compromise the ability of ecosystems to deliver crucial goods and services, affecting human health through the increase in dehydration-related illnesses¹⁶⁸. Prolonged human exposure to air pollution rises the susceptibility to cardiovascular and respiratory disorders, deficit of the reproductive and central

¹⁵⁷ UNDP, “New threats to human security in the Anthropocene Demanding greater solidarity”, 2022.

¹⁵⁸ *Ibidem*.

¹⁵⁹ *Ibidem*.

¹⁶⁰ Ray, D. K., *et al.*, “Climate Change Has Likely Already Affected Global Food Production.”, 2019.

¹⁶¹ Niles, M. T., and Brown, M. E. “A Multi-country Assessment of Factors Related to Smallholder Food Security in Varying Rainfall Conditions.”, 2017.

¹⁶² UNDP, “New threats to human security in the Anthropocene Demanding greater solidarity”, 2022.

¹⁶³ *Ibidem*.

¹⁶⁴ *Ibidem*.

¹⁶⁵ European Commission, Directorate-General for Climate Action, “Climate change. Consequences of climate change”, Climate action, 2023.

¹⁶⁶ UNDP, “New threats to human security in the Anthropocene Demanding greater solidarity”, 2022.

¹⁶⁷ Ding *et al.*, “Vulnerability to Impacts of Climate Change on Marine Fisheries and Food Security”, 2017.

¹⁶⁸ European Commission, Directorate-General for Climate Action, “Climate change. Consequences of climate change”, Climate action, 2023.

nervous systems, as well as an elevated risk of cancer¹⁶⁹. These health consequences contribute to increase mortality rates and decrease overall life expectancy¹⁷⁰.

Also, deterioration of biodiversity and alterations in land use patterns can elevate the transmission of diseases¹⁷¹. In Bangladesh, for example, the substantial reduction of bat habitats due to forest loss has heightened the likelihood of virus spillover between bats and humans¹⁷². Deforestation within the Amazon rainforest has escalated malaria transmission rates in Brazil, in particular a 10 percent rise in deforestation corresponds to a 3.3 percent surge in malaria occurrence¹⁷³.

On a global scale, approximately 80 percent of industrial and municipal wastewater is discharged into the environment without undergoing any treatment, resulting in adverse impacts on both human well-being and ecosystems¹⁷⁴. Industries generate heavy metals that are often released into water bodies without adequate processing and treatment, consequently subjecting humans, and wildlife to pollution¹⁷⁵. As an illustration, fish commonly consumed in Bangladesh exhibited varying degrees of heavy metal contamination, implying a plausible association between the consumption of these tainted fish and the occurrence of cancer¹⁷⁶.

Furthermore, by the year 2100, considering a high emission scenario, the anticipated rise in global temperatures due to climate change is forecasted to result in a surge of 73 deaths per 100,000 individuals¹⁷⁷. These numbers are comparable to the mortality rates associated with current primary causes of deaths. Indeed, *Graph 2* shows the effects of climate change considering both the high emissions scenario (RCP8.5) and the moderate emissions one (RCP4.5)¹⁷⁸. The projections include alterations in mortality rates, represented by solid colours, and adjustments in adaptation costs, which are depicted by light colouring¹⁷⁹. The right-side features blue bars illustrating the average global mortality rates in 2018¹⁸⁰.

¹⁶⁹ Manisalidis, I., *et al.*, “Environmental and Health Impacts of Air Pollution: A Review.” *Frontiers in Public Health* 8: 14, 2020.

¹⁷⁰ *Ibidem*.

¹⁷¹ Keesing *et al.*, “Impacts of Biodiversity on the Emergence and Transmission of Infectious Diseases”, 2010.

¹⁷² McKee *et al.*, “The Ecology of Nipah Virus in Bangladesh: A Nexus of Land-Use Change and Opportunistic Feeding Behavior in Bats”, 2021.

¹⁷³ MacDonald and Mordecai, “Amazon Deforestation Drives Malaria Transmission, and Malaria Burden Reduces Forest Clearing”, 2019.

¹⁷⁴ UNEP, *From Conflict to Peacebuilding. The Role of Natural Resources and the Environment*, Nairobi, 2009.

¹⁷⁵ UNDP, “New threats to human security in the Anthropocene Demanding greater solidarity”, 2022.

¹⁷⁶ *Ibidem*.

¹⁷⁷ Tamma C., *et al.*, “Valuing the Global Mortality Consequences of Climate Change Accounting for Adaptation Costs and Benefits”, *The Quarterly Journal of Economics*, 137 (4), pp. 2037–2105, 2022.

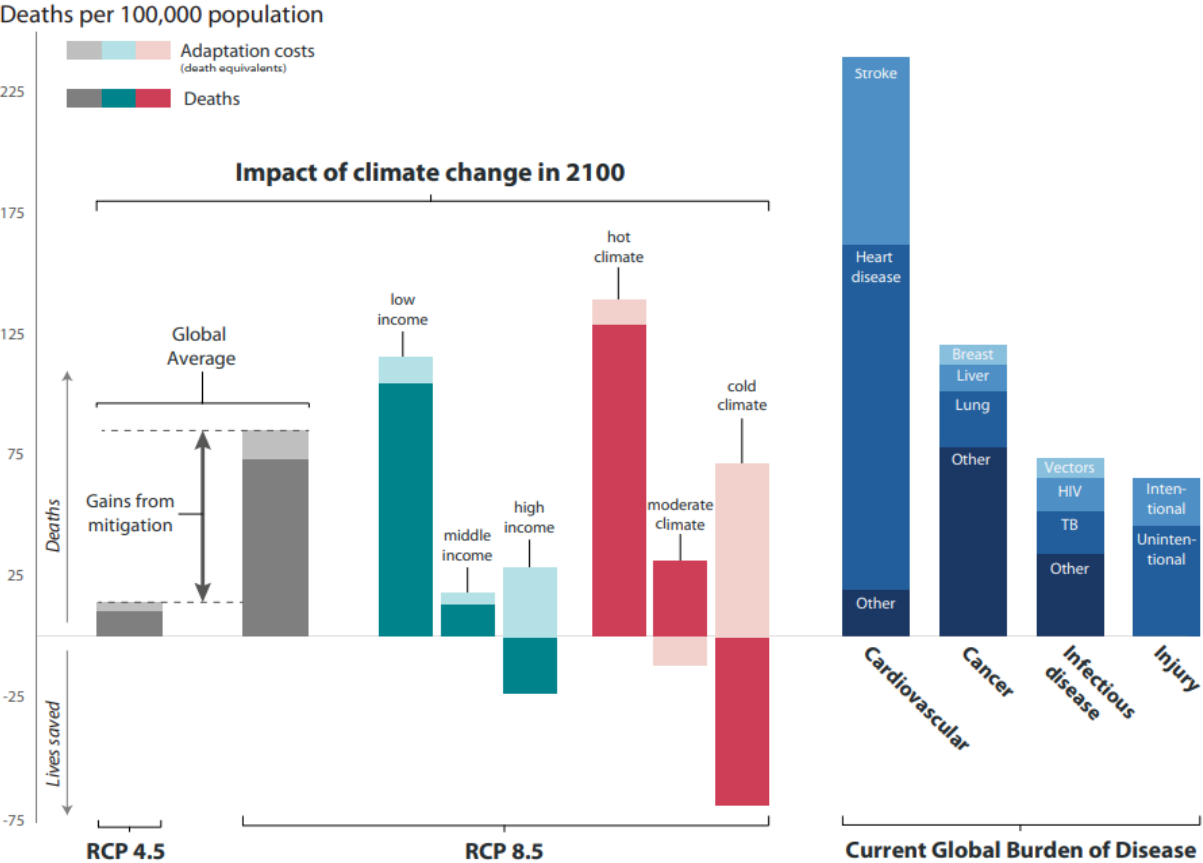
¹⁷⁸ *Ibidem*.

¹⁷⁹ *Ibidem*.

¹⁸⁰ *Ibidem*.

The anticipated impact of climate change on diseases is projected to exhibit significant disparities. Approximately 80 percent of the global population will face a substantial increase in mortality rates¹⁸¹. In specific areas within the Arab States and Sub-Saharan Africa, death rates attributed to climate change may even surpass current prominent causes of death, such as cancer and heart disease¹⁸². Conversely, the remaining 20 percent of the global population, distributed across other regions, are expected to observe diminished overall mortality rates owing to a decrease in extremely cold temperatures¹⁸³. Certainly, the mortality risk attributed to climate change exhibits a disproportionate impact on regions characterized by both poverty and elevated temperatures, thereby exacerbating pre-existing inequalities¹⁸⁴. The disparity between low income and high-income countries is also displayed by *Figure 1*.

Figure 1 – Mortality consequences of climate change



Source: Figure obtained from Tamma C., *et al.*, “Valuing the Global Mortality Consequences of Climate Change Accounting for Adaptation Costs and Benefits”, *The Quarterly Journal of Economics*, 137 (4), p. 2099, 2022.

¹⁸¹ UNDP, “New threats to human security in the Anthropocene Demanding greater solidarity”, p. 54, 2022.
¹⁸² *Ibidem*.
¹⁸³ Carleton, T. A., *et al.*, “Valuing the Global Mortality Consequences of Climate Change Accounting for Adaptation Costs and Benefits.” 2020.
¹⁸⁴ Tamma C., *et al.*, “Valuing the Global Mortality Consequences of Climate Change Accounting for Adaptation Costs and Benefits”, *The Quarterly Journal of Economics*, 137 (4), pp. 2037–2105, 2022.

2.2.4 Environmental security

Climate change is causing a range of environmental impacts that threaten human security, such as heat waves, floods, droughts, and increasingly frequent and extreme storms. High temperatures and heat waves bring glaciers and polar ice caps to melt, seawater to expand from its warming and sea levels to rise¹⁸⁵. Furthermore, a change in the geographic distribution of climate zones is expected as a result of rising temperatures as well as water evaporation¹⁸⁶. The latter, combined with the lack of precipitation, will increase the likelihood of extreme droughts¹⁸⁷.

Equally adverse are the consequences that come from precipitation irregularities. Heavy rainstorms are expected to be more frequent and more violent due to higher temperatures¹⁸⁸. The excessive rainfall over long periods will lead to river flooding, land degradation and soil erosion, affecting people, business, and infrastructures¹⁸⁹. Contrary, the lack of precipitation brings shortage of water availability, which changes flows in glacier-fed rivers, results in salinization of coastal aquifers, and shifting of seasons¹⁹⁰. The lack of freshwater represents today the biggest natural aftermath as it is suffering from the combination of all these factors¹⁹¹. Water scarcity will affect 87 nations by 2050, with the number of countries experiencing absolute water scarcity nearly doubling, from 25 to 45. By then, an additional 1 billion people are expected to live with extremely high-water stress¹⁹².

Nonetheless, the direct and immediate consequences that climate change has on the environment are many and far-reaching. The indirect ramifications that emerge from each of these effects are severely affecting individuals living capacity and altering their physical environment.

2.2.5 Personal and political security

Fluctuations in weather patterns, disruptions in the supply and distribution of food, as well as limitations in the availability of land and resources, have been consistently associated with

¹⁸⁵ Rüttinger, L., *et al.*, “A New Climate For Peace. Taking Action on Climate and Fragility Risks”, 2015.

¹⁸⁶ European Commission, Directorate-General for Climate Action, “Climate change. Consequences of climate change”, Climate action, 2023.

¹⁸⁷ *Ibidem.*

¹⁸⁸ *Ibidem.*

¹⁸⁹ *Ibidem.*

¹⁹⁰ Rüttinger, L., *et al.*, “A New Climate For Peace. Taking Action on Climate and Fragility Risks”, 2015.

¹⁹¹ European Commission, Directorate-General for Climate Action, “Climate change. Consequences of climate change”, Climate action, 2023.

¹⁹² Kuzma, S., *et al.*, “25 Countries, Housing One-quarter of the Population, Face Extremely High-Water Stress”, World Resources Institute”, August 2023.

increased potential for conflict¹⁹³. Although alterations in the environment can amplify tensions, it is the intricate interplay between structural complexities of development, socio-economic and political circumstances, and power disparities that mainly catalyse the emergence of conflicts¹⁹⁴. Climate-related challenges, such as managing disaster responses or implementing effective adaptation measures, can strain governmental capacities and resources. Inadequate responses can erode trust in governance systems, contribute to political instability and state failure in some regions.

Climate hazards have the potential to amplify political unrest, particularly when intertwined with the marginalization of specific groups and their consequent deprivation¹⁹⁵. The nexus between climate change and conflict is mostly seen within developing nations. They are characterized by substantial agricultural sectors reliant on rainfall and environmental conditions, combined with limited economic diversification¹⁹⁶. Within these contexts, occurrences such as droughts, alterations in precipitation patterns and dry periods during crop cultivation, serve to elevate the risks of conflict¹⁹⁷. Indeed, water scarcity can lead to severe social unrest in regions that have weak institutions and water management¹⁹⁸. Prolonged droughts and resulting starvations can create tensions among local communities, fuelling conflicts and driving populations to seek refuge in other regions or countries.

At least 18 violent conflicts since 1990 have been fuelled by the exploitation of natural resources and, over the past sixty years, at least 40 percent of all intrastate conflicts have had a resource connection¹⁹⁹. Civil wars such as those in Liberia, Angola, and the Democratic Republic of Congo were fought around valuable resources like diamonds, gold, minerals, and oil²⁰⁰. Other conflicts, including those in Darfur and the Middle East, involved control over scarce resources such as water and fertile land²⁰¹.

These scenarios result in compromised livelihoods, the surge in food prices, the augmentation of food insecurity, ultimately affecting individuals' personal security and contributing to their displacement. Indeed, as stated by the United Nations High Commissioner for Refugees,

¹⁹³ Hsiang, S., "Climate Econometrics." *Annual Review of Resource Economics* 8(1), 2015.

¹⁹⁴ Lövbrand, E., and Mobjörk, M. "Anthropocene (in)Securities Reflections on Collective Survival 50 Years after the Stockholm Conference". Oxford, UK: Oxford University Press., 2021.

¹⁹⁵ Ide, T., Kristensen, A., and Bartusevičius, H., "First Comes the River, then Comes the Conflict? A qualitative Comparative Analysis of Flood-related Political Unrest." *Journal of Peace Research* 58(1): 83–97, 2021.

¹⁹⁶ UNDP, "New threats to human security in the Anthropocene Demanding greater solidarity", p. 55, 2022.

¹⁹⁷ *Ibidem*.

¹⁹⁸ IPCC, 2022: *Climate Change 2022: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change*

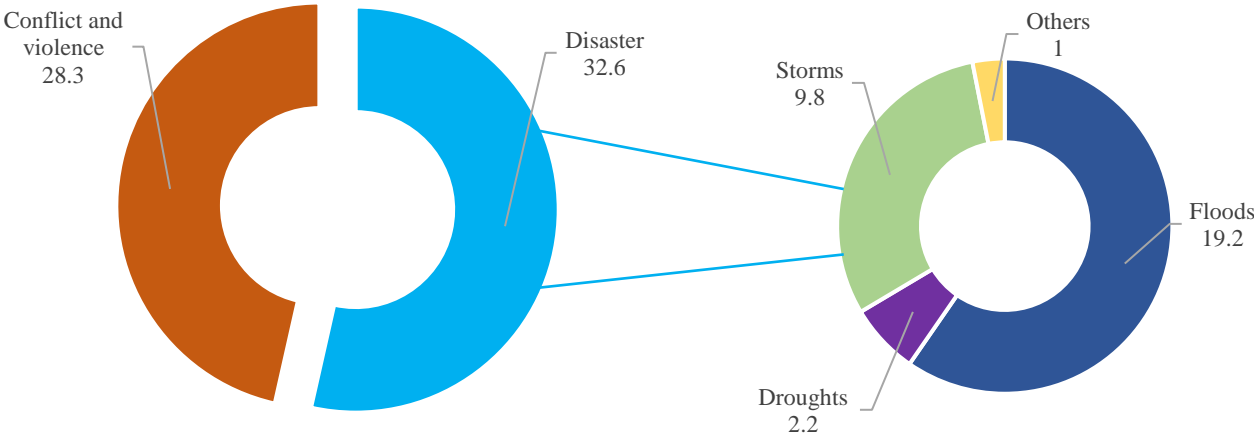
¹⁹⁹ UNEP, "From Conflict to Peacebuilding. The Role of Natural Resources and the Environment, Nairobi, 2009.

²⁰⁰ *Ibidem*.

²⁰¹ *Ibidem*.

approximately 9 out of 10 refugees originate from nation’s most prone to climate change repercussions²⁰². The last Global Report on Internal Displacement published in 2023 by the International Displacement Monitoring Centre (IDMC), documented 60.9 million internal displacements across 151 countries and territories²⁰³. This figure marks a 60 percent increase compared to the numbers reported in 2021²⁰⁴ and stands as the highest ever recorded²⁰⁵. Notably, among these internal displacements, a historic high of 32.6 million were linked to various disasters, while an additional 28.3 million were attributed to conflict and violence²⁰⁶. *Graph 3* gives a visual representation of the impact of each disaster on the number of internal displacements. It shows how 98 percent of displacements caused by disasters were triggered by weather-related hazards involving floods, storms, and droughts²⁰⁷.

Graph 2 – New displacements in 2022: breakdown for conflict and disaster (in million)

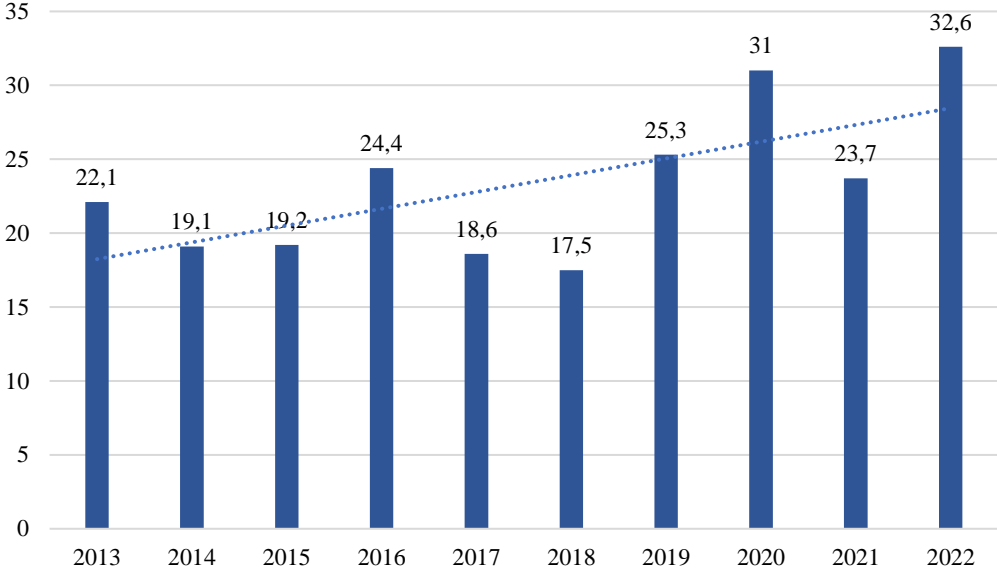


Source: Data obtained from Global Report on Internal Displacement 2023 by the International Displacement Monitoring Centre, 2023.

²⁰² United Nations, “Climate Change Link to Displacement of Most Vulnerable Is Clear: UNHCR.” Press Release, 2021.
²⁰³ International Displacement Monitoring Centre (IDMC), “Internal displacement and food security”, Global Report on Internal Displacement, 2023.
²⁰⁴ In 2021, conflict, violence, and disasters triggered 38 million internal displacements across 141 countries and territories. IDMC, “Children and youth in internal displacement”, Global Report on Internal Displacement, 2022.
²⁰⁵ IDMC, “Internal displacement and food security”, Global Report on Internal Displacement, 2023.
²⁰⁶ *Ibidem*.
²⁰⁷ International Displacement Monitoring Centre (IDMC), “Internal displacement and food security”, Global Report on Internal Displacement, 2023.

Furthermore, in 2022, the number of disaster-related displacements was 41 percent higher than the annual average of the past 10 years (*Graph 3*)²⁰⁸.

Graph 3 – Internal displacements by disasters (in millions)



Source: Data obtained from Global Report on Internal Displacement 2023 by the Internal Displacement Monitoring Centre. 2023.

Then, individuals who have been forcibly displaced, particularly because of climate-related hazards, confront countless human security challenges both within their home regions and refuge locations. The data show how this trend is heading towards an increasingly dangerous and escalating situation also given its significant geopolitical ramifications. The circumstances will potentially lead to shifts in power dynamics and the emergence of new rivalries²⁰⁹. One descriptive scenario involves the competition over rare earth minerals essential for low-carbon technologies, which can influence nations on a global scale²¹⁰.

2.2.6 Community security

To conclude, at this time it is clear how climate change may alter social relations and challenge social cohesion. It adds to the already discussed significant effects of climate change, like

²⁰⁸ Internal Displacement Monitoring Centre (IDMC), “Internal displacement and food security”, Global Report on Internal Displacement, 2023.

²⁰⁹ Lazard, O., and Youngs, R. The EU and Climate Security: Toward Ecological Diplomacy. Washington, DC, and Brussels: Carnegie Endowment for International Peace and Open Society European Policy Institute, 2021.

²¹⁰ *Ibidem*.

disaster vulnerability, loss of livelihoods and increased migration, all of which undermine the security of communities disrupting their safety and well-being.

This section is then relevant to further highlight the uneven impact of climate change on different communities. For instance, women face a heightened exposure to livelihood insecurity and associated risks²¹¹. While precise statistics remain a subject of debate, there is a widely acknowledged understanding that women are disproportionately prone to poverty compared to men²¹². Women contribute significantly, ranging from 45 to 80 percent, to food production in developing nations²¹³. They bear the responsibilities of managing household energy, water, and caregiving for both the young and elderly members²¹⁴. Also, the ramifications of climate change have the potential to exacerbate the workload for women and girls²¹⁵. This includes scenarios where they may need to travel longer distances to obtain daily essentials, subsequently reducing their available time for engaging in paid employment and potentially exposing them to elevated personal risks²¹⁶. Then, the diminishing availability of food due to climate change will inevitably lead to reduced economic stability, compromised food security, and worsened health for women, for their families, for poorest and most marginalized people²¹⁷.

These dimensions are essential in the present analysis as they are applied as a framework to emphasize variations between the countries selected for the case study. Indeed, next chapter highlights the different national and international perspectives based on environmental, social, economic, and power imbalances that characterise countries. Based on the aforementioned components, these inequalities culminate in significant differences both in people's ability to withstand the growing threats and in the design of adaptation policies by their governments.

²¹¹ Rüttinger, L., *et al.*, "A New Climate For Peace. Taking Action on Climate and Fragility Risks", 2015.

²¹² *Ibidem.*

²¹³ UN Climate Change News, "Five Reasons Why Climate Action Needs Women", 2023.

²¹⁴ *Ibidem.*

²¹⁵ *Ibidem.*

²¹⁶ *Ibidem.*

²¹⁷ UN Women, "How gender inequality and climate change are interconnected", 2022.

CHAPTER III

Comparative Case Studies: Exploring Climate-Induced Human Insecurity

3.1 National and international perspectives

The progression of human security recognises the disparities between the political, economic, social, and environmental conditions that influence countries, both within and between them²¹⁸. Therefore, as human security values solutions that are deeply rooted in the realities of local communities and grounded in the authority of national governments, it also advocates responses that are contextually relevant and prioritise the needs of individuals²¹⁹. This way, the quality and relevance of domestic policies can be improved²²⁰.

Approaching human security at the national level helps developing a more comprehensive and contextualised understanding of the unique challenges facing a specific country²²¹. An increasingly people-centred national planning process that actively involves communities and incorporates local alterations²²². It also helps accentuating the most crucial and all-encompassing threats to the well-being, livelihood, and dignity of individuals²²³. This method helps uncover the potential disparities between local and national policies and programmes, as well as regional and international ones²²⁴. This nationally oriented approach highlights the interconnected challenges experienced by diverse communities and strengthens the capacities of governments to mitigate the consequences of those challenges and prevent the emergence of future crises²²⁵.

However, even though environmental threats can be locally contextualised and so diversified between nations, when it comes to mitigation and adaptation policies, the approach should be implemented at the international level. Moreover, governments do retain the principal responsibility for preserving the well-being of their populations, but most recent crises have intensified the international community's attention towards threats that extend beyond the direct control of individual governments²²⁶. As far as adapting national strategies to local conditions

²¹⁸ UN General Assembly, "Follow-up to General Assembly resolution 66/290 on human security", Report of the Secretary-General, A/68/685, December 2013.

²¹⁹ *Ibidem*.

²²⁰ *Ibidem*.

²²¹ *Ibidem*.

²²² *Ibidem*.

²²³ *Ibidem*.

²²⁴ *Ibidem*.

²²⁵ *Ibidem*.

²²⁶ *Ibidem*.

is concerned, countries are not always in a position to implement their policies, whether due to a lack of expertise, funds, knowledge or measures available.

Also, when several pressures converge, risks become more acute as climate change interacts with other forces and factors²²⁷. Given the climate change nature as a “threat multiplier”, it accelerates and magnifies existing trends, tensions, and instabilities, increasing the frequency of hostilities and driving new sets of secondary risks²²⁸. The strongest impact of climate change on the security of states, communities and individuals is in fact conditioned by existing social, economic, and environmental threats²²⁹. Indeed, environmental insecurity denotes a dual vulnerability of individuals, originating from the compounding effects of underdevelopment, fragile governance institutions and poverty, intensified by the impacts of environmental change²³⁰. Then, the majority of individuals who face the most severe climate effects are often the ones with limited influence and opportunities to shape adaptation policies or decision-making processes. The power with which environmental outcomes are delivered depends on the capacity of States and communities to adapt to different threats as well as the level of resistance of individuals in facing them.

It is in these terms that the idea of the “undemocratic” nature of the climate crisis is introduced. On the one hand, the notion is understood as the diverse ways in which the crisis manifests on different populations. Although the impact of climate change is being experienced globally, the greatest threats loom over already fragile states and regions that are environmentally, geographically, institutionally, and socioeconomically vulnerable to the effects of climate change²³¹. Prominent among these countries are, for example, Small Island Development States, which experience climate change as a threat to their very existence given their geographical characteristics²³².

This aspect is even more stressed considering that the low-income economies of the global South are also the most vulnerable, even though high-income, and highly industrialised countries are the ones most accountable for the process of change taking place²³³. Indeed, in

²²⁷ Rüttinger, L., *et al.*, “A New Climate For Peace. Taking Action on Climate and Fragility Risks”, 2015.

²²⁸ UN General Assembly, Climate change and its possible security implications. Report of the Secretary-General, New York, A/64/350, September 2009.

²²⁹ *Ibidem*.

²³⁰ Barnett, J., “The Meaning of Environmental Security: Ecological Politics and Policy in the New Security Era”. Zed Books, 2001.

London and New York.

²³¹ Internazionale, Centro Studi Politica, “Cambiamenti climatici e governance della sicurezza: la rilevanza politica della nuova agenda internazionale”, 2010.

²³² *Ibidem*.

²³³ Internazionale, Centro Studi Politica, “Cambiamenti climatici e governance della sicurezza: la rilevanza politica della nuova agenda internazionale”, 2010.

2021, the world collectively emitted approximately 37.12 billion tonnes of CO² ²³⁴. More than half of all carbon emissions can be attributed to the top 10 percent wealthiest individuals globally²³⁵. Africa's carbon emissions are equal to approximately 1.45 billion tonnes, notably lower compared to other continents; China ranks as the world's largest polluter, with emissions reaching 11.47 billion tonnes, followed by the United States at 5 billion tonnes, and India at 2.7 billion tonnes²³⁶. This way Africa's contribution to total carbon emissions accounts for just 4 percent of the global total²³⁷.

On the other hand, the substantial differences in terms of energy resources, income, and expertise distinguishing industrialised and developing countries demonstrate how the same states who are mostly responsible for the crisis are also those enjoying greater advantages and opportunities, compared to others, when it comes to formulating and implementing climate policies.

In the following sections, the former nationally oriented approach is employed. It will then be investigated the way the three countries define and recognize their populations security according to the way the crisis manifests locally.

²³⁴ Al Jazeera Media Network, "How much does Africa contribute to global carbon emissions?", 2023.

²³⁵ *Ibidem*.

²³⁶ *Ibidem*.

²³⁷ *Ibidem*.

3.2 United States: financial uncertainty and reduced quality of life

The U.S. Department of Defense (DoD) recognised climate change as the leading management challenge and as a critical national security issue²³⁸. According to the most recent Climate Risk Analysis, climate change is currently in the process of restructuring the geostrategic landscape²³⁹. Rise in temperatures, shifts in precipitation patterns, the escalating frequency and unpredictability of extreme weather events are amplifying pre-existing vulnerabilities, therefore posing new challenges to U.S. interests²⁴⁰.

While keeping in mind the very high position of the United States in the Human Development Index (HDI) ranking, 21st position, and the high HDI value of 0.921²⁴¹, the way those interests are defined enables an important consideration regarding the States' approach in identifying climate-induced human insecurity. The Risk Analysis is developed in terms of preserving the strategies, plans, capabilities, missions, and equipment of the U.S., its allies, and partners²⁴². The DoD has been evaluating how the crisis is anticipated to elevate the need for defence missions, influence vital supply chains, infrastructure, and overall readiness²⁴³. Indeed, failing to adapt to the evolving climate landscape carries profound consequences, like encompassing the loss of military capacity and weakening of vital alliances²⁴⁴. Additional erosion of international standing, degradation of critical infrastructure, and missed prospects for advancements in technology and economic prosperity is expected²⁴⁵.

Today, the Department main concerns focus on the potential economic losses attributed to extreme weather events that could be faced by the United States and its citizens, with projected losses amounting to billions of dollars²⁴⁶.

3.2.1 Economic fluctuations

The greater influence of climate change manifest on the U.S. citizens economic security. Contemporary weather phenomena have the potential to affect multiple economic dimensions. These include alterations in overall economic productivity, income levels, employment

²³⁸ Department of Defense (DoD), "Climate Adaptation Plan". Report Submitted to National Climate Task Force and Federal Chief Sustainability Officer, 2021.

²³⁹ Department of Defense (DoD), "Climate Risk Analysis", Office of the Undersecretary for Policy, Report Submitted to National Security Council, 2021.

²⁴⁰ *Ibidem*.

²⁴¹ UNDP Human Development Report 2021-22, "Uncertain times, unsettled lives Shaping our future in a transforming world", 2022.

²⁴² Department of Defense (DoD), "Climate Risk Analysis", Office of the Undersecretary for Policy, Report Submitted to National Security Council, 2021.

²⁴³ *Ibidem*.

²⁴⁴ *Ibidem*.

²⁴⁵ *Ibidem*.

²⁴⁶ *Ibidem*.

opportunities, and economic prospects²⁴⁷. Such climate-induced economic fluctuations are evident in specific communities²⁴⁸. Vulnerable sectors include those associated with seasonal and outdoor activities, involving recreational ones on coral reefs, inland waters and winter sports that are highly dependent on the outdoor and environmental disturbances²⁴⁹.

The most frequent and costly natural disaster in the United States is recognised in the risk of flooding²⁵⁰. Along with the resulting land degradation, floods are expected to severely distress businesses and critical infrastructure, affecting populations that will be denied of vital goods and services²⁵¹. As a consequence, the overall American economy will be negatively affected. A particular study projects a 26.4 percent increase in costs over the next 30 years that the U.S. will have to face just to cope with future flood damages²⁵². Moreover, the projected harm could contribute to social unrest within the country, as the imminent increase in risk will disproportionately affect black communities, mainly concentrated on the Atlantic and Gulf coasts²⁵³.

These types of economic fluctuations also have a strong impact on trade. As noted earlier, the ramifications of climate change cross international borders leading to swings in import and export costs that will inevitably affect U.S. companies engaged in foreign operations and supply chains²⁵⁴. This will increase the financial uncertainty of individuals, affecting their jobs and their economic growth. Indeed, disruptions in supply chains can result in shortages of vital products. If import costs rise significantly, there can be an increase in the prices of imported goods, including food, fuel, and pharmaceuticals. Such increase may cause pressure on American households and affect their ability to access basic necessities, therefore reducing their overall quality of life. At the same time, the country's economy will be affected as 72.1 percent of American GDP derives from the tertiary sector in which 73.3 percent of workers are employed²⁵⁵.

²⁴⁷ Department of Defense (DoD), "Climate Risk Analysis", Office of the Undersecretary for Policy, Report Submitted to National Security Council, 2021.

²⁴⁸ *Ibidem*.

²⁴⁹ *Ibidem*.

²⁵⁰ Wing, O. E., et al., "Inequitable patterns of US flood risk in the Anthropocene.", 2022.

²⁵¹ U.S. Global Change Research Program (USGCRP), "Impacts, Risks, and Adaptation in the United States: Fourth National Climate Assessment, Volume II", U.S. Global Change Research Program, Washington, DC, USA, 2018.

²⁵² Wing, O. E., et al., "Inequitable patterns of US flood risk in the Anthropocene.", 2022.

²⁵³ Wing, O. E., et al., "Inequitable patterns of US flood risk in the Anthropocene.", 2022.

²⁵⁴ USGCRP, "Impacts, Risks, and Adaptation in the United States: Fourth National Climate Assessment, Volume II", U.S. Global Change Research Program, Washington, DC, USA, 2018.

²⁵⁵ Tutto America, "L'economia americana", 2023.

3.2.2 Food quality, availability, and prices

Despite the greater frequency of flooding, the United States is not immune to rising temperatures. Indeed, global warming have shown repercussions on the Americans food security²⁵⁶. Primary implications are seen on food quality and prices. Rising temperatures have certainly altered the exposure of food to specific pathogens and toxins²⁵⁷. Increased CO² concentrations have led to decreased levels of iron, zinc, protein and other macro and micronutrients in crops and seafood²⁵⁸. Furthermore, rising food prices is a fact. Eggs, for example, experienced a notable surge, rising by 60 percent in 2022²⁵⁹. Similarly, droughts and heat waves have led to a 30 percent increase in the cost of chicken feed, further contributing to the overall price increase²⁶⁰.

Contrary, while there may be alterations in food availability in terms of barley, rice and wheat yields, there is at the same time an increase in maize, sorghum, soybean, and sugarcane crops²⁶¹. Indeed, it is worth noting that, according to a recent study, climate change has contributed to an overall increase in calorie consumption in the U.S.²⁶².

Then, while large changes in the availability and prices of agricultural commodities are mostly expected on a global scale²⁶³, current American distress regards the following effects on U.S. agricultural producers and the overall U.S. economy²⁶⁴.

3.2.3 Adverse health outcomes: Air Quality Index

The consequences of climate change on air quality and the transmission of diseases via insects and pests are progressively jeopardizing physical and mental health and the overall well-being of the American population. Projections indicate that the adverse health outcomes will further exacerbate as climate change intensifies²⁶⁵.

The recent wildfires in Canada in May and June 2023 underline this growing threat. Smoke from fires led to a notable deterioration in air quality across central and northeastern regions of

²⁵⁶ Tutto America, “L’economia americana”, 2023.

²⁵⁷ Ray, D. K., West, P. C., Clark, M., Gerber, J. S., Prishchepov, A. V., & Chatterjee, S., “Climate change has likely already affected global food production”. *PloS one*, 14(5), e0217148, 2019.

²⁵⁸ USGCRP, “Impacts, Risks, and Adaptation in the United States: Fourth National Climate Assessment, Volume II”, U.S. Global Change Research Program, Washington, DC, USA, 2018.

²⁵⁹ *Ibidem*.

²⁶⁰ Kerr, S., “Yes, the climate crisis is raising your grocery bills”, *The Guardian*, 2023.

²⁶¹ Ray, D. K., West, P. C., Clark, M., Gerber, J. S., Prishchepov, A. V., & Chatterjee, S., “Climate change has likely already affected global food production”. *PloS one*, 14(5), e0217148, 2019.

²⁶² *Ibidem*.

²⁶³ Ray, D. K., West, P. C., Clark, M., Gerber, J. S., Prishchepov, A. V., & Chatterjee, S., “Climate change has likely already affected global food production”. *PloS one*, 14(5), e0217148, 2019.

²⁶⁴ *Ibidem*.

²⁶⁵ *Ibidem*.

the United States²⁶⁶. Specifically, at the occurrence of the event, air quality in New York reached alarming levels to the point of surpassing safe ones²⁶⁷. Indeed, on June 7th, the Air Quality Index (AQI) in New York City soared to 341²⁶⁸, reaching a threatening level for all residents. Essentially, health advisories have been issued for the entirety State of New York²⁶⁹. This summer the city has been ranked among the areas with some of the most severe air pollution issues globally²⁷⁰. There was a very high risk that such levels of exposure to pollution could result in headaches, eye irritation, asthma exacerbations, breathing difficulties and more²⁷¹. This impact was particularly pronounced among sensitive populations, such as the elderly, children, and individuals with compromised immune systems²⁷². Consequently, although all Americans are potentially exposed to health consequences, some groups are subject to more serious health risks, as they are potentially more vulnerable or disproportionately impacted²⁷³.

In addition, data on temperature-related mortality have also been reported. In 49 large cities in the United States, projected changes in temperature extremes, hot and cold, are expected to lead to an excess of more than 9,000 premature deaths per year by the end of the century²⁷⁴. However, this figure could be reduced since the estimates do not consider factors such as acclimatisation or other adaptation measures²⁷⁵.

3.2.4 *Physical security of U.S coastal populations*

The United States has an extensive coastline running along the Atlantic and Pacific Oceans, the Gulf of Mexico, and various inland waterways. Many large cities and highly populated areas are located in these coastal regions, making them extremely vulnerable to the effects of sea-level rise²⁷⁶. Coastal regions are also more exposed to the risk of storm surges during hurricanes and tropical storms. Sea-level rise can exacerbate the impact of these events, leading to more extensive and destructive flooding.

²⁶⁶ Cohen, L., “New York City air becomes some of the worst in the world as Canada wildfire smoke blows in”, CBS News, June 7, 2023.

²⁶⁷ *Ibidem*.

²⁶⁸ World Weather Attribution, “Climate change more than doubled the likelihood of extreme fire weather conditions in Eastern Canada”, August 22, 2023.

²⁶⁹ Cohen, L., “New York City air becomes some of the worst in the world as Canada wildfire smoke blows in”, CBS News, June 7, 2023.

²⁷⁰ *Ibidem*.

²⁷¹ *Ibidem*.

²⁷² *Ibidem*.

²⁷³ *Ibidem*.

²⁷⁴ USGCRP, “Impacts, Risks, and Adaptation in the United States: Fourth National Climate Assessment, Volume II”, U.S. Global Change Research Program, Washington, DC, USA, 2018.

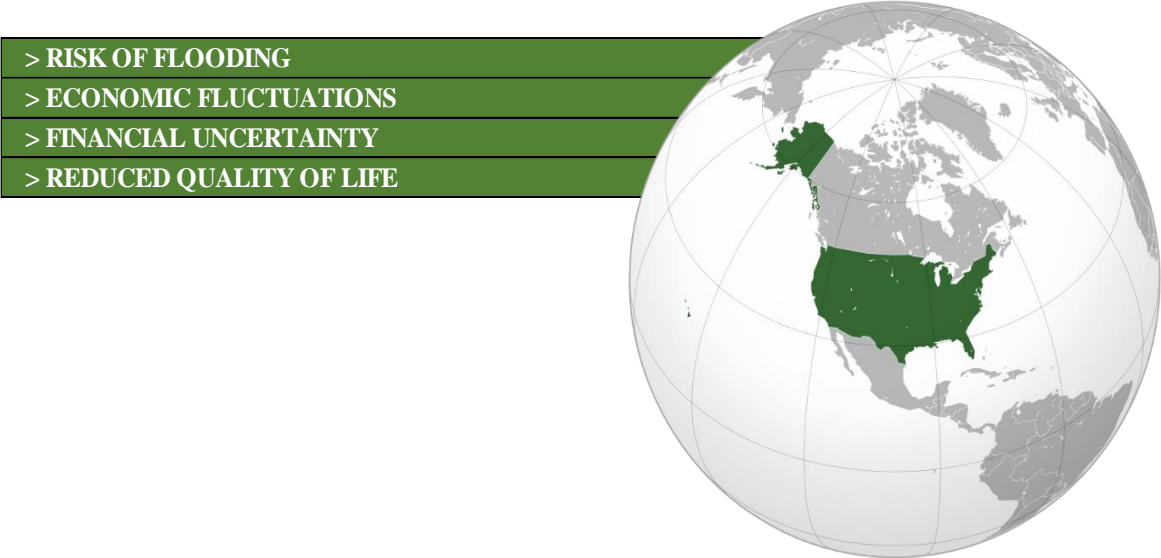
²⁷⁵ *Ibidem*.

²⁷⁶ *Ibidem*.

On August 30th, 2023, the state of South Carolina experienced the impact of the tropical storm “Idalia”, manifesting those threats²⁷⁷. Classified as a Category 3 hurricane, Idalia brought abundant rainfall and sustained winds with speeds of 60 miles per hour to the Southeastern region of the United States²⁷⁸. Notably, the storm surge associated with Idalia broke records becoming the most frightening hurricane to make landfall in the Big Bend region, situated between the Florida panhandle and the peninsula, in over a century²⁷⁹. The aftermath of Hurricane Idalia has led to localized flooding in specific geographic areas, along with a substantial power outage affecting more than 400,000 utility customers in the states of Florida, Georgia, and South Carolina²⁸⁰. During the hurricane’s, around 150 residents in Florida required emergency rescue operations in flooded neighbourhoods²⁸¹. Additionally, the impact of the Hurricane has resulted in substantial damage to homes in Florida’s Pasco County, with estimates indicating that approximately 4,000 to 6,000 residences have been affected²⁸².

These scenarios not only constrain physical security of an extensive portion of the population, but they also confirm the aforementioned predictions in terms of future economic intervention following extreme weather events. Therefore, urgent government action is required in those specific areas along the U.S. coastline²⁸³.

Figure 2 – Pressures on the USA



²⁷⁷ Wolfe, E., Enochs, L., Vales, L., Vogt, A., Hayes, M., Hammond, E., & Powell, T., “August 30, 2023 - Idalia makes Florida landfall”, CNN, 2023.
²⁷⁸ *Ibidem.*
²⁷⁹ *Ibidem.*
²⁸⁰ *Ibidem.*
²⁸¹ *Ibidem.*
²⁸² *Ibidem.*
²⁸³ USGCRP, “Impacts, Risks, and Adaptation in the United States: Fourth National Climate Assessment, Volume II”, U.S. Global Change Research Program, Washington, DC, USA, 2018.

3.2.5 *Adaptation policies and final remarks*

The United States government underwent a significant shift in its approach to climate security during recent years. Starting from 2020, this topic assumed a central position in the U.S. presidential campaign becoming one of the country's global priorities as confirmed by the U.S. National Security Strategy²⁸⁴.

With reference to human safety, the Fourth National Climate Assessment, published by the U.S. Global Change Research Program, established a direct link between rising temperatures and the resulting alterations on lives, communities, and economic well-being of Americans²⁸⁵. The analysis considers both current and future challenges. It offers extensive evidence of the vulnerabilities, dangers, and wide-ranging repercussions that climate change poses to people's daily lives and sources of income²⁸⁶. American people are acknowledging these risks and are initiating proactive responses to address them²⁸⁷.

The latest 2022 Climate Change Adaptation Plan goes over the imminent national security threats²⁸⁸. Particularly, the Department of Defence, once the priorities were defined, developed five specific actions requiring instant force to counter the incidence of climate change²⁸⁹. They include immediate and continuous action on:

1. Climate-informed decision-making: creating an all-embracing Climate Resilience Strategy that fully integrates the Sustainability Report and Implementation Plan, the Defense Climate Risk Assessment, the National Intelligence Estimate, and the National Defense Strategy;
2. Train and equip a climate-ready force: guaranteeing forces capable of functioning under the most risky and hostile weather conditions;
3. Resilient built and natural installation infrastructure: including energy, water, and climate resilience;
4. Supply chain resilience and innovation: involving the strengthening of the industrial base and providing a network of national and allied supply chains to meet state security needs;

²⁸⁴ Biden, J. R., "Biden-Harris White House National Security Strategy, October 2022." Collections 2022, 2022.

²⁸⁵ USGCRP, "Impacts, Risks, and Adaptation in the United States: Fourth National Climate Assessment, Volume II", U.S. Global Change Research Program, Washington, DC, USA, 2018.

²⁸⁶ *Ibidem*.

²⁸⁷ *Ibidem*.

²⁸⁸ Department of Defense, Office of the Undersecretary of Defense (Acquisition and Sustainment). 2022. Department of Defense Climate Adaptation Plan 2022 Progress Report. Report Submitted to National Climate Task Force and Federal Chief Sustainability Officer. 4 October 2022.

²⁸⁹ Department of Defense, Office of the Undersecretary of Defense (Acquisition and Sustainment). 2022. Department of Defense Climate Adaptation Plan 2022 Progress Report. Report Submitted to National Climate Task Force and Federal Chief Sustainability Officer. 4 October 2022.

5. Enhance adaptation and resilience through collaboration: reinforcing existing partnerships and form new ones to increase adaptation and resilience agenda's competences and capacity²⁹⁰.

On the basis of the outlined priority, what seems to be missing is a “people-oriented” view of the agenda. The Plan is constructed to emphasize the United States prioritizing climate change mitigation through the lens of national security. It defines the looming threats to the entire nation indirectly linking the consequences reverberating on the population. Here, national security involves economic stability and growth, the functionality of critical infrastructure, and technological advancement. Consequently, safeguarding the well-being of all Americans means ensuring employment, income, and access to essential services. Therefore, the overarching goal of state security will lead to that of the population.

However, even if the impact of climate change on Americans seems to be predominantly economic, there are also effects on people's physical security and health that cannot be linked to economic factors. The United States approach might be limiting not only their global view of the crisis, but undermining the need for an intervention that goes beyond national borders and that is also aligned with global action plans and not just with their interests and that of their closest allies.

²⁹⁰ Department of Defense, Office of the Undersecretary of Defense (Acquisition and Sustainment). 2022. Department of Defense Climate Adaptation Plan 2022 Progress Report. Report Submitted to National Climate Task Force and Federal Chief Sustainability Officer. 4 October 2022.

3.3 Niger: agricultural stress and humanitarian crisis

Niger is one of the world's poorest and least developed nations²⁹¹. With one of the lowest Human Development Index (HDI) values, 0.400²⁹², Niger is hardly able to recover from the extreme difficulties related to the insecurity that characterises the entire Sahel region²⁹³. Indeed, Niger ranked in 9th position among the most affected countries in 2019, considerably climbing up the list compared to 2018 where it occupied position 128²⁹⁴. The increasing frequency of climate shocks in the region is resulting in significant losses in agricultural outputs, delaying the accumulation of human capital, and posing a potential threat of severe ecological and economic critical points in the Sahel²⁹⁵.

Environmental security has reached unliveable levels for the population. Temperatures are rising 1.5 times faster than in the rest of the world²⁹⁶. The country is notably prone to land degradation and desertification; rainfall, when it occurs, turns into powerful and sudden floods²⁹⁷. The Sahel region has been designated²⁹⁸ as one of the most critical global hotspots if the average surface temperature increases by 3°C compared to pre-industrial levels²⁹⁸. The IPCC has indicated that the leading climate projections suggest a temperature rise of at least 2°C in the Sahel region in the near future²⁹⁹.

Moreover, the country has experienced multiple natural disasters over the last twenty years, with floods and droughts being the most common occurrences³⁰⁰. Almost every year, Niger faces at least one of these types of disasters³⁰¹. The most vulnerable groups within the population, typically the poorest segments, are disproportionately exposed to these adverse effects of climate change. Vulnerability lays in their limited reliance and capacity to adapt to changing conditions³⁰². Between 2016 and 2020, more than 20 million people, representing 90 percent of those affected by natural disasters, faced food insecurity and economic hardship as a result of drought-related impacts³⁰³. Extreme climate events have the potential to cause both

²⁹¹ World Bank, "G5 Sahel, Country Climate and Development Report" (CCDR). World Bank Group, 2022.

²⁹² UNDP Human Development Report 2021-22, "Uncertain times, unsettled lives Shaping our future in a transforming world", 2022.

²⁹³ Atlante delle Guerre, "Niger", 2023.

²⁹⁴ Eckstein, D., Kunzel, V., and Schafer, L., "Global Climate Risk Report 2021. Who Suffers Most from Extreme Weather Events? Weather-Related Loss Events in 2019 and 2000-2019". Germanwatch, January 2021.

²⁹⁵ World Bank, "G5 Sahel, Country Climate and Development Report" (CCDR). World Bank Group, 2022.

²⁹⁶ *Ibidem*.

²⁹⁷ *Ibidem*.

²⁹⁸ *Ibidem*.

²⁹⁹ Trisos, C.H., *et al.*, "Africa". In: Climate Change 2022: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change, Chap. 9, 2022.

³⁰⁰ World Bank, "G5 Sahel, Country Climate and Development Report" (CCDR). World Bank Group, 2022.

³⁰¹ *Ibidem*.

³⁰² *Ibidem*.

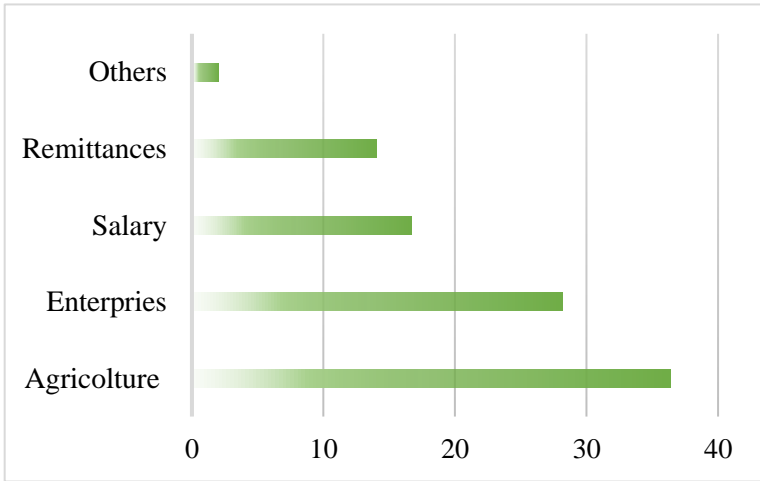
³⁰³ *Ibidem*.

human suffering and significant economic losses. Indeed, according to the Intended Nationally Determined Contribution (INDC), drought-related losses in Niger exceed USD 70 million on average, accounting for around 0.6 percent of its GDP³⁰⁴.

3.3.1 *Agriculture: the centre of a vulnerable economy*

The severe impact of climate change has disrupted Niger’s previously fragile agricultural sector. Overall, the economy lacks diversification and relies mainly on the primary sector as the main source of livelihood and income for a large part of the rural population (*Graph 3*)³⁰⁵. Specifically, more than 80% of the population depends on rainfed agriculture, which accounted for 36.4 percent of GDP in 2021³⁰⁶.

Graph 3 – Income Sources of Households (% of GDP)



Source: Data based on Diallo, Y., *The Effects of Climate and Conflict Shocks on Household Welfare: Niger in International Monetary Fund (IMF) Country Report No. 23/29. Niger: Selected Issues Papers*. January 2023.

Apart from these figures, it is estimated that, in Niger alone, there are today around 2.5 million people who are food insecure³⁰⁷. The UN estimates a further increase up to 3.6 million during the lean season³⁰⁸. Malnutrition indicators are extremely worrying, especially for children; the acute malnutrition rate is estimated to be 10 percent according to the World Health Organisation³⁰⁹. Likewise, water scarcity remains a substantial obstacle to development in a

³⁰⁴ Diallo, Y., “The Effects of Climate and Conflict Shocks on Household Welfare: Niger”. International Monetary Fund, *Selected Issues Papers*, 2023.

³⁰⁵ *Ibidem*.

³⁰⁶ *Ibidem*.

³⁰⁷ Cospe, “In Niger la crisi climatica è la più grave degli ultimi 20 anni”, *greenreport.it*, 2022.

³⁰⁸ *Ibidem*.

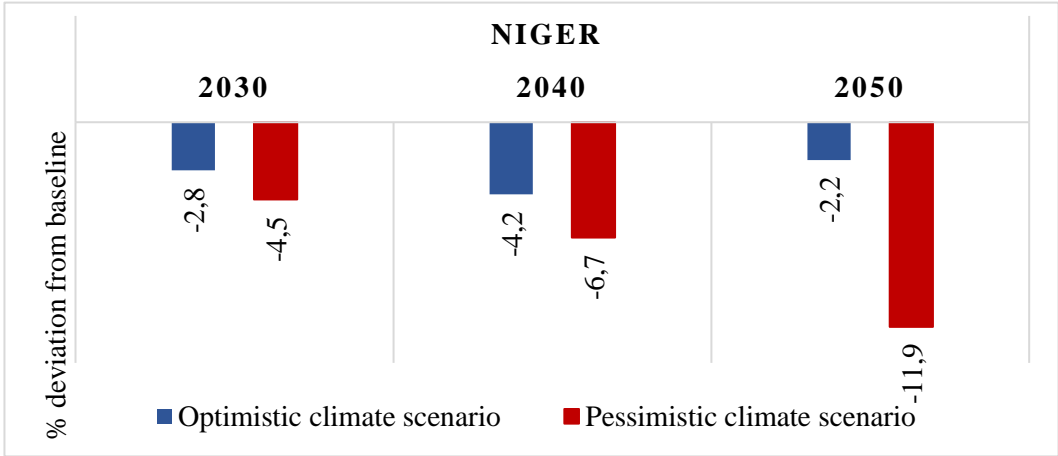
³⁰⁹ *Ibidem*.

region characterized by high water stress levels³¹⁰. In countries like Burkina Faso, Chad, and Niger, access to basic drinking water is available to less than half of the population³¹¹. The scarcity of surface water, which is often seasonal, underscores the importance of groundwater as a primary water source for many residents in the region³¹².

As temperatures increase, crops like cotton become more vulnerable to the adverse effects of extreme heat³¹³. Cereal production experienced a significant reduction of 38 percent in 2021, which was comparable to the 11 percent decrease observed during the drought episode in 2005³¹⁴. Significant threats are posed to pastoral systems, impacting productivity, reproductive rates, and biodiversity³¹⁵. By 2100, losses in milk production could reach as high as 17 percent due to the adverse effects of climate change³¹⁶.

Therefore, the agricultural sector will experience further alterations in the future to the point that they will have an overall impact on the annual GDP. Projections show a decline of 2.2 percent in an optimistic scenario and of 11.9 percent in a more pessimistic one by 2050 (*Graph 4*)³¹⁷. These estimates may even be moderate as they do not include all impact channels³¹⁸. They do not account for the amplifying consequences of climate-induced rises in conflicts, ecosystem transformations, and migration³¹⁹.

Graph 4 – Annual GDP losses with no adaptation



Source: Based on The World Bank. G5 Sahel, Country Climate and Development Report (CCDR). World Bank Group, 2022.

³¹⁰ Cospe, “In Niger la crisi climatica è la più grave degli ultimi 20 anni”, greenreport.it, 2022.
³¹¹ *Ibidem*.
³¹² *Ibidem*.
³¹³ World Bank, “G5 Sahel, Country Climate and Development Report” (CCDR). World Bank Group, 2022.
³¹⁴ Diallo, Y., “The Effects of Climate and Conflict Shocks on Household Welfare: Niger” in International Monetary Fund (IMF) Country Report No. 23/29, Niger: Selected Issues Papers, January 2023.
³¹⁵ *Ibidem*.
³¹⁶ World Bank, “G5 Sahel, Country Climate and Development Report” (CCDR). World Bank Group, 2022.
³¹⁷ *Ibidem*.
³¹⁸ *Ibidem*.
³¹⁹ *Ibidem*.

3.3.2 *Extreme levels of poverty*

Highly at risk is also Nigerians economic security. Development indicators reveal significant challenges characterized by elevated poverty rates, pronounced inequality, limited human capital, and an underutilized demographic potential³²⁰. Nearly 41 percent of the population lives below the poverty threshold earning less than USD 1.90 a day³²¹. By the year 2050, the poverty rate is projected to rise by 8.6 percent compared to the baseline³²². Also, poverty is not evenly distributed across regions. The adverse impacts of climate change on poverty are more pronounced in rural areas compared to urban ones and a substantial 83 percent of the populations lives in those regions³²³. Only 7 percent of the capital population in Niamey is considered poor contrary to more than 45 percent of the population in Dosso, Zinder, and Maradi³²⁴. Disparities in both regional development and socioeconomic status are exacerbated by the absence of fundamental infrastructure in remote regions³²⁵. These vulnerabilities are further compounded by the ongoing security challenges and the adverse environmental variability.

3.3.3 *Multifaced displacement dynamics*

Droughts and sudden floods resulting from altered rainfall patterns are the factors behind the displacement of thousands of people each year. In particular, floods in 2022 displaced 248,000 people, almost twice as many as the 125,000 displaced in 2021 (*Graph 5*)³²⁶. These movements represent the consequent destruction of houses and crops. Likewise, persistent droughts, have favoured migration from rural to urban areas, further exacerbating the security of the population³²⁷. Indeed, cities can only offer limited economic prospects to these rural migrants³²⁸. The risk is that national food insecurity will be further exacerbated³²⁹ and inter-community tensions between pastoralists and farmers will intensify, creating favourable conditions for conflicts over limited resource³³⁰. Altogether, this can trigger even more relocation scenarios³³¹.

³²⁰ Diallo, Y., “The Effects of Climate and Conflict Shocks on Household Welfare: Niger”. *Selected Issues Papers*, 2023.

³²¹ Atlante delle Guerre, “Niger”, 2023.

³²² World Bank, “G5 Sahel, Country Climate and Development Report” (CCDR). World Bank Group, 2022.

³²³ *Ibidem*.

³²⁴ Diallo, Y., “The Effects of Climate and Conflict Shocks on Household Welfare: Niger”. International Monetary Fund, *Selected Issues Papers*, 2023.

³²⁵ *Ibidem*.

³²⁶ IDMC, “Country Profile: Niger”, 2023.

³²⁷ World Bank, “G5 Sahel, Country Climate and Development Report” (CCDR). World Bank Group, 2022.

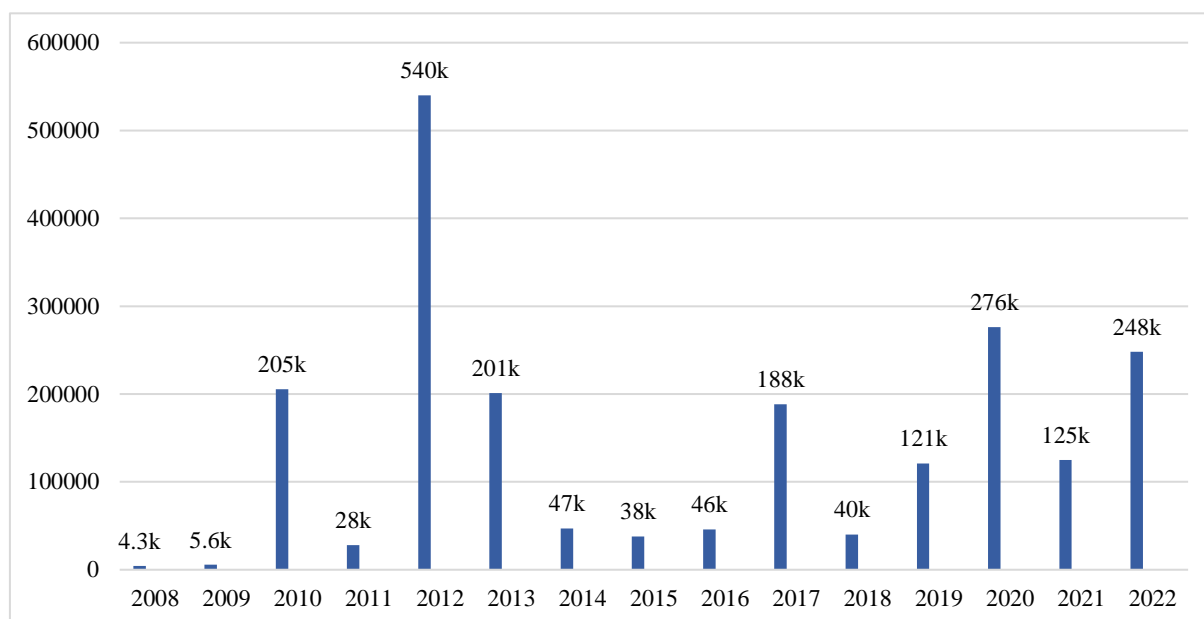
³²⁸ *Ibidem*.

³²⁹ IDMC, “Country Profile: Niger”, 2023.

³³⁰ *Ibidem*.

³³¹ *Ibidem*.

Graph 5 – Disaster Displacement Data from 2008 to 2022 in Niger



Source: Data obtained from the Internal Displacement Monitoring Centre (IDMC), *Country Profile: Niger*. Displacement Data, 2023.

The most recent displacement was recorded in July 2023. Over 23,000 people were forced to flee their villages in the Say department. More than 55% of these displaced people found refuge in the town of Ouro Gueladjo, while others settled in Torodi, Gueladjo and the Tillabéri region³³². The humanitarian situation remains precarious, with a lack of shelter, non-food items, health care, food and drinking water for the refugees³³³.

It is also important to stress that Niger receives an incredible number of refugees from surrounding countries, in addition to Internally Displaced Persons. It is one of the main transit states for migratory flows towards the Mediterranean³³⁴. The city of Agadez, in particular, is considered the gateway from West Africa to the Sahara³³⁵. At the end of March 2021, the country had a total of 313,000 IDPs and 235,000 refugees. In 2022, the numbers increased; between January and April, there were more than 36,000 new arrivals from Nigeria, Mali, and Burkina Faso, with an average of more than 2,500 people per week³³⁶. By 2022, there were 580,000 displaced persons, of which 380,000 are refugees, mostly women and children, in need of shelter, water, food and access to basic services such as health care and education³³⁷. The

³³² IDMC, “Country Profile: Niger,” 2023.

³³³ *Ibidem*.

³³⁴ Carbone, G., *et al.*, “Cause di migrazione e contesti di origine”, 2020.

³³⁵ *Ibidem*.

³³⁶ *Ibidem*.

³³⁷ *Ibidem*.

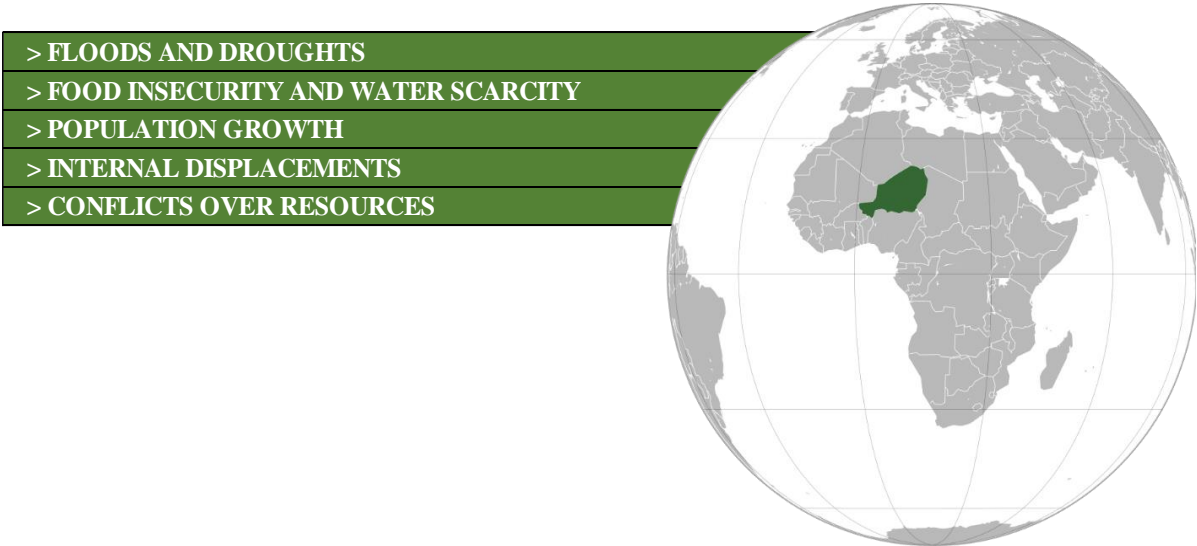
fact that, once they arrive, they settle in some of the driest areas of Niger makes their situation even more precarious. With the general rise in prices and the ongoing food security crisis, the survival of both refugees and local communities is being severely tested.

3.3.4 The highest population growth rate

Further increasing the danger of food and commodity shortages is Niger’s high population growth rate. It is the country with the highest rate in the Sahel region with a 161 percent increase in population expected by 2050³³⁸. It has the highest fertility rate in the world, with an average of 7 children born per woman³³⁹. In other words, an increase from 25.1 to 65.5 million people by mid-century³⁴⁰. The rapid growth rate will put additional pressure on forest and agricultural resources³⁴¹. This will result in an increased demand for arable land which, in turn, will decrease the capacity of forests to support adaptation and resilience efforts³⁴².

In a context of limited resources, food insecurity and living space, this growth, together with migration flows, pose additional pressure on institutions, generating popular discontent and creating favourable conditions for the proliferation of armed groups³⁴³. A region devastated by climate change, where the weakness of state institutions and endemic corruption persist, exposes the population to further risk by fuelling the conditions in which terrorist groups thrive and recruit³⁴⁴.

Figure 3 – Pressures on Niger



³³⁸ World Bank, “G5 Sahel, Country Climate and Development Report” (CCDR). World Bank Group, 2022.
³³⁹ *Ibidem*.
³⁴⁰ *Ibidem*.
³⁴¹ *Ibidem*.
³⁴² *Ibidem*.
³⁴³ *Ibidem*.
³⁴⁴ Atlante delle Guerre, “Niger”, 2023.

3.3.5 *Adaptation policies and final remarks*

The Country Climate Development Report (CCDR) by the World Bank has conducted an analysis to identify key actions and policy adjustments³⁴⁵. The purpose is to advance the Sahel region's economic resurgence, promote sustainable and equitable development, and enhance its capacity to adapt to the consequences of climate change³⁴⁶.

Although all G5 Sahel countries together contribute less than 1 percent to global greenhouse gas emissions, Niger has established emission reduction targets in its Nationally Determined Contributions (NDC) under the Paris Agreement³⁴⁷. The goal is to access modern and clean energy services for all by 2030 and committing to net-zero emissions by 2050³⁴⁸. These targets were updated during the COP26 meeting in Glasgow in 2021³⁴⁹. Niger's NDCs focuses on several key pillars, such as promoting climate-smart agricultural practices, including the use of weather information, early warning systems, index-based agriculture insurance, risk, and disaster management³⁵⁰.

The NDCs and the supplementary calculations presented in the CCDR indicate the significant financial resources required to support climate action³⁵¹. Particularly, Niger needs a total NDCs investment estimation of USD 9.91 billion by 2030, counting for both mitigation and adaptation³⁵².

There are three key impact areas to be prioritised when discussing adaptation interventions³⁵³;

1. Extended irrigation for rainfed crops;
2. Improved livestock feeding practices;
3. Investment in climate-resilient roads and bridges.

The expansion of irrigation systems, for example, can result in substantial improvements in economic output by addressing existing productivity gaps in agriculture and rectifying infrastructure deficiencies³⁵⁴. Based on these priorities, it is understood how human security plays a key role in the formulation of adaptation policies. Specifically, strong emphasis is placed on improving the agricultural sector to enhance humans' food security. Agriculture is found under great stress being the first source of GDP and income, and under significant danger from

³⁴⁵ World Bank, "G5 Sahel, Country Climate and Development Report" (CCDR). World Bank Group, 2022.

³⁴⁶ *Ibidem*.

³⁴⁷ *Ibidem*.

³⁴⁸ World Bank, "G5 Sahel, Country Climate and Development Report" (CCDR). World Bank Group, 2022.

³⁴⁹ *Ibidem*.

³⁵⁰ Climate Watch Data. Republic of Niger. Nationally Determined Contribution (NDC), October 2021.

³⁵¹ World Bank, "G5 Sahel, Country Climate and Development Report" (CCDR). World Bank Group, 2022.

³⁵² *Ibidem*.

³⁵³ *Ibidem*.

³⁵⁴ *Ibidem*.

population growth and displacement. Productivity levels resisting climate change are not sufficient to feed such a large number of people resulting in poverty, malnutrition, and overall risk of survival.

Furthermore, it is important to note that the costs associated with these adaptation investments, particularly in the initial years, remain considerable when compared to the fiscal capacities of the country³⁵⁵. Securing financial support is just one aspect of the challenge at hand. Equally crucial is the need to expand or establish institutions, planning processes, and regulatory frameworks to achieve climate and development objectives³⁵⁶. This includes implementing risk finance instruments, improving urban land use planning, strengthening environmental regulations, enhancing hydrological and meteorological capabilities, reforming land ownership and governance policies, and fortifying social protection systems³⁵⁷.

To reach the estimated total cost for the implementation of Niger's NDCs, the government is committed to contribute with 26.4 percent of this funding, with the expectation that donors will provide the remaining financial support. This reflects the country's dedication to addressing climate change and its recognition of the need for both domestic and international collaboration to achieve its climate objectives.

³⁵⁵ World Bank, "G5 Sahel, Country Climate and Development Report" (CCDR). World Bank Group, 2022.

³⁵⁶ *Ibidem*.

³⁵⁷ *Ibidem*.

3.4 Bangladesh: coastal erosion and internal migration

Among the numerous difficulties experienced by the people of Bangladesh, environmental insecurity rank as some of the most prominent³⁵⁸. It has always shown a high degree of vulnerability to natural hazards, and climate change has greatly influenced their intensity and frequency. Bangladesh's geographical location within the tropics, situated along the Gulf of Bengal and encompassing the delta regions of three major rivers – the Ganges, Brahmaputra-Jamuna, and Meghna – brings the nation to be exceptionally prone to coastal inundation and river flooding, especially in the central and mid-western inland areas³⁵⁹.

Given the already fragile state of the country, climate change strongly exercises its function as a “risk multiplier” exacerbating social tensions at both sub-national and national levels. At the same time, it erodes critical aspects of human security, notably in the areas of food and health³⁶⁰, as well as internal migration and related political instability.

Bangladesh is part of the medium human development countries category, with currently a Human Development Index (HDI) value of 0.661, positioning the country in place 129 out of 191 countries³⁶¹. Nevertheless, the state's ability to guarantee security to its populations is comparatively limited, due also to a multitude of economic, political, and structural factors³⁶². The combination of environmental vulnerability, inadequate infrastructure and socioeconomic conditions diminishes the ability of local communities to address the consequences of climate-related shocks and stresses³⁶³.

Environmental pressures are escalating. By 2060, the country anticipates a range of climate impacts including; annual temperature increases between 0.5°C and 2.8°C, with a greater impact on northern regions compared to southern regions; shifts in annual rainfall from a potential decrease of around 14 percent to an increase of approximately 24 percent; and substantial sea level rise, with estimates fluctuating from a 27 centimetres increase by 2050 to an increase of 30 to 100 centimetres by 2100³⁶⁴. These changing scenarios correspond to projections of potential land loss between 10 and 18 percent, depending on the variable sea rise

³⁵⁸ Saferworld, “Human security in Bangladesh”, 2007.

³⁵⁹ Bangladesh Institute of International and Strategic Studies and Saferworld, “Climate change and security in Bangladesh: A case study”, June 2009.

³⁶⁰ Brennan, M., “Understanding climate-related security risks in Bangladesh”, UNDP, Issue no. 23, 2020.

³⁶¹ UNDP Human Development Report 2021-22, “Uncertain times, unsettled lives Shaping our future in a transforming world”, 2022.

³⁶² Bangladesh Institute of International and Strategic Studies and Saferworld, “Climate change and security in Bangladesh: A case study”, June 2009.

³⁶³ International Centre for Climate Change and Development (ICCCAD), “Understanding Climate Change Vulnerability in Two Coastal Villages in Bangladesh and Exploring Options for Resilience”, April 2019.

³⁶⁴ USAID, Climate Risk Profile: Bangladesh”, 2018.

from 45 to 95 centimetres³⁶⁵. Although there are many climate implications for people, communities and national security, the most profound and far-reaching effects seem to come from rising sea levels, increased coastal flooding and intensified severe cyclones.

3.4.1 Salinity affecting food and water resources

Salinity has been a persistent issue in the coastal areas of Bangladesh, where approximately 30% of the arable land is located³⁶⁶. Here, salinity levels are influenced by tidal flooding during the wet season, direct inundation from storm surges, and the movement of saline groundwater and surface water during the dry season³⁶⁷. Water alterations are adversely affecting crop yields and agricultural production³⁶⁸. The heavy reliance on aquifers for irrigation, covering approximately half of the agricultural land, exacerbates the threat of rising salinity³⁶⁹. Projections indicate that the impacts of climate change could lead to a yearly reduction of 3.1 percent in agricultural GDP³⁷⁰. This reduction is conditioned by the multiple aspects constituting this sector and their relevant response to environmental alterations. Prominent among these are land drought, altered fisheries and inaccessibility to drinking water.

Out of the 1.2 million hectares of arable land utilized for agriculture, a substantial 77 percent is dedicated to rice production³⁷¹. Rice plays a crucial role in daily caloric intake, constituting 71 percent of rural consumers' daily calories and 63 percent for urban consumers³⁷². Loss of cultivated land is projected to result in a reduction of 8 percent in rice production and of an estimated 32 percent of wheat by 2050³⁷³.

The fisheries sector is very important in Bangladesh. It constitutes 23 percent of the agricultural sector and provides 80 percent of the total animal protein consumed in the country³⁷⁴. Today, it faces increasing threats from riverbank erosion, floods, storm surges, and saline intrusion³⁷⁵. These climate change stressors, coupled with drought and heat waves, are expected to have detrimental effects on the country's fisheries³⁷⁶. Additionally, livestock, which serves as a vital

³⁶⁵ USAID, *Climate Risk Profile: Bangladesh*, 2018.

³⁶⁶ International Centre for Climate Change and Development (ICCCAD), "Understanding Climate Change Vulnerability in Two Coastal Villages in Bangladesh and Exploring Options for Resilience", April 2019.

³⁶⁷ *Ibidem*.

³⁶⁸ USAID, *Climate Risk Profile: Bangladesh*, 2018.

³⁶⁹ *Ibidem*.

³⁷⁰ *Ibidem*.

³⁷¹ *Ibidem*.

³⁷² *Ibidem*.

³⁷³ IPCC, "Working Group II, *Climate Change 2007: Impacts, Adaptation & Vulnerability*", 2007.

³⁷⁴ USAID, *Climate Risk Profile: Bangladesh*, 2018.

³⁷⁵ *Ibidem*.

³⁷⁶ *Ibidem*.

source of income and food for the rural poor, is also anticipated to be negatively affected by these climate-related challenges³⁷⁷.

Moreover, extreme climate events are expected to have a significant impact on the functionality and accessibility of water supply and sanitation infrastructure³⁷⁸. As a response to worsening drought conditions and increased agricultural demand, there is a growing trend of groundwater extraction for drinking water and irrigation³⁷⁹. However, the presence of stagnant saline water on the soil surface can infiltrate groundwater reserves, leading to contamination of freshwater sources³⁸⁰. This contamination makes the water unsuitable for both irrigation and drinking purposes³⁸¹. The availability of safe drinking water is further threatened by sea level rise and worsening storm surges, which contribute to increased salinization of aquifers in coastal areas³⁸². This diminishing access to quality drinking water, combined with inadequate sanitation infrastructure and a slow adoption of improved sanitation practices, raises the risk of water- and vector-borne diseases, including diarrhoea, cholera, malaria, and dengue³⁸³.

3.4.2 Loss of property and coastal degradation related insecurity

Property plays a crucial role in supporting livelihoods and income generation³⁸⁴. When property is lost due to natural disasters, it can significantly reduce the ability to meet basic needs and can lead to poverty and unemployment³⁸⁵. Many individuals affected by natural disasters are compelled to take out loans to replace their lost property³⁸⁶. Repaying these loans can be challenging, further undermining livelihood security and stretching traditional coping mechanisms to their limits³⁸⁷. In this scenario, land is gradually disappearing due to the combined effects of rising sea levels and erosion³⁸⁸. Climate change projections suggest that in the coming decades, substantial land areas could be lost³⁸⁹.

³⁷⁷ USAID, Climate Risk Profile: Bangladesh”, 2018

³⁷⁸ *Ibidem*.

³⁷⁹ *Ibidem*.

³⁸⁰ Bangladesh Institute of International and Strategic Studies and Saferworld, “Climate change and security in Bangladesh: A case study”, June 2009.

³⁸¹ *Ibidem*.

³⁸² USAID, Climate Risk Profile: Bangladesh”, 2018

³⁸³ *Ibidem*.

³⁸⁴ Bangladesh Institute of International and Strategic Studies and Saferworld, “Climate change and security in Bangladesh: A case study”, June 2009.

³⁸⁵ *Ibidem*.

³⁸⁶ *Ibidem*.

³⁸⁷ *Ibidem*.

³⁸⁸ *Ibidem*.

³⁸⁹ *Ibidem*.

Consequently, houses have been carried away or demolished by floods and erosion, leading to the displacement of many villagers³⁹⁰. By 2070, approximately 1.5 million people will be affected by flooding in the coastal cities of Bangladesh alone³⁹¹. Bangladesh's topography is characterized by its low elevation, with most of the country situated at less than 10 meters above sea level, and the average elevation in the coastal belt being less than 3 meters³⁹². Notably, the rate of sea-level rise along the coastal areas of Bangladesh is reported to be significantly higher than the global average³⁹³. Recent research has even suggested that previous projections may have substantially underestimated the severity of sea-level rise³⁹⁴. According to a report published in 2020, by the year 2100, sea-level rise in different parts of the Ganges-Brahmaputra-Meghna (GBM) Delta could range between 85 and 140 centimetres, effectively doubling earlier projections³⁹⁵.

3.4.3 Growing climate migration pressure

Disasters are indeed the primary cause of displacement in Bangladesh, with a significant number of people forced to move during the monsoon season from June to September when floods displace an average of one million individuals annually³⁹⁶. Cyclones also contribute to displacements, with an average of approximately 110,000 people being displaced each year due to these destructive storms³⁹⁷. An illustrative case is Cyclone Amphan, which originated over the Indian Ocean on May 16, 2020, and began tracking northward across the Bay of Bengal, heading towards the coastal regions of northeastern India and the southern part of Bangladesh³⁹⁸. To mitigate its impact, over 2.4 million individuals were relocated to a total of 14,636 permanent and temporary shelters³⁹⁹. Cyclone Amphan made landfall in the coastal areas of West Bengal, then in India, and later in Bangladesh⁴⁰⁰. It arrived with wind speeds of up to 150 km/h, causing widespread devastation in 26 districts of the country⁴⁰¹.

Afterwards, in 2021, there was a decrease in the number of new disaster-related displacements, with 99,000 recorded (*Graph 6*). This decrease can be attributed to a low-intensity monsoon

³⁹⁰ Bangladesh Institute of International and Strategic Studies and Saferworld, "Climate change and security in Bangladesh: A case study", June 2009.

³⁹¹ World Bank, "Turn Down the Heat: Climate Extremes, Regional Impacts, and the Case for Resilience", 2013.

³⁹² *Ibidem*.

³⁹³ Brennan, M., "Understanding climate-related security risks in Bangladesh", UNDP, Issue no. 23, 2020.

³⁹⁴ *Ibidem*.

³⁹⁵ *Ibidem*.

³⁹⁶ Internal Displacement Monitoring Centre (IDMC), Country Profile: Bangladesh, 2023.

³⁹⁷ *Ibidem*.

³⁹⁸ International Federation of Red Cross and Red Crescent Society, "Bangladesh: Cyclone Amphan", Final Report, 2021.

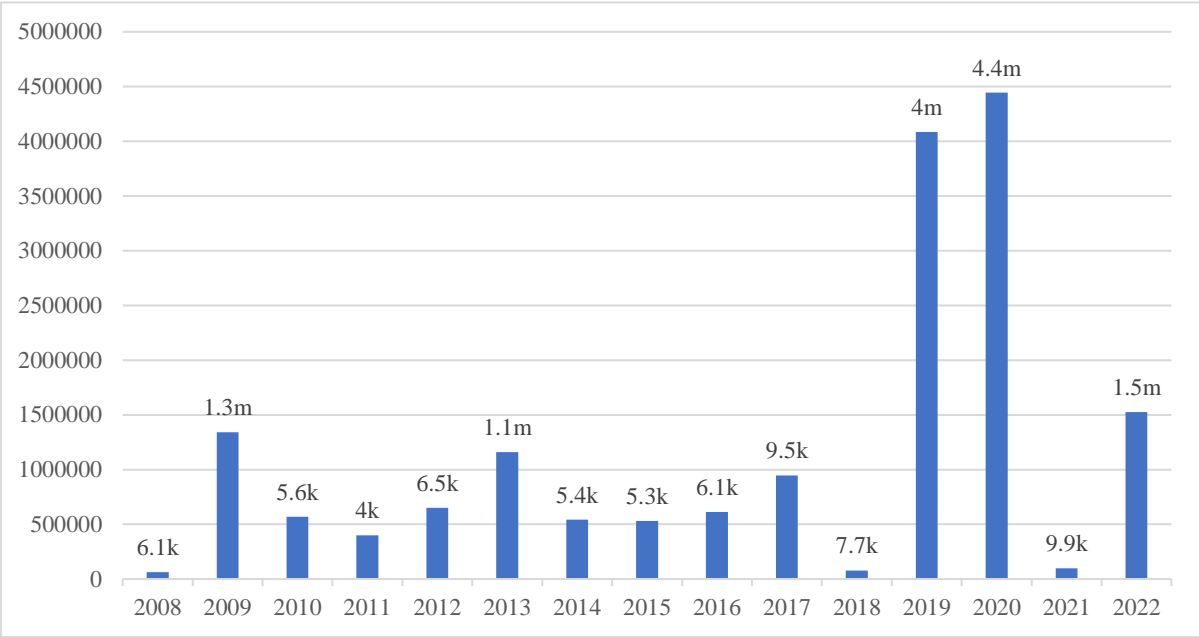
³⁹⁹ *Ibidem*.

⁴⁰⁰ *Ibidem*.

⁴⁰¹ *Ibidem*.

season and the absence of severe storms⁴⁰². Cyclone Yaas, which struck the Bay of Bengal in May 2021, was the only major storm of the year and led to 18,000 displacements⁴⁰³. While this number is significantly lower than previous years, it is not completely unexpected as severe cyclones tend to hit Bangladesh every two or three years. Indeed, in 2022 the number of displacements increased up to 1.5 million people (*Graph 6*)⁴⁰⁴.

Graph 6 – Disaster Displacement Data from 2008 to 2022 in Bangladesh



Source: Data obtained from the Internal Displacement Monitoring Centre (IDMC), *Country Profile: Bangladesh*. Displacement Data, 2023.

There are concerns that by 2050, the number of individuals displaced due to climate change impacts will reach an estimated 13.3 million⁴⁰⁵. The country could face a cyclone with a return period of 10 years, potentially exposing as many as 9.7 million people to a 3-meter inundation⁴⁰⁶. In this sense, increased migration will strain basic services and resources, making it difficult for migrants to access their basic needs⁴⁰⁷. Most urban migrants will find low-income informal sector jobs and insecure housing, lacking essential services such as clean drinking water, healthcare, and education⁴⁰⁸. In urban areas with fragile water infrastructure, increased

⁴⁰² Internal Displacement Monitoring Centre (IDMC), *Country Profile: Bangladesh*, 2023.

⁴⁰³ *Ibidem*.

⁴⁰⁴ *Ibidem*.

⁴⁰⁵ Brennan, M., “Understanding climate-related security risks in Bangladesh”, UNDP, Issue no. 23, 2020.

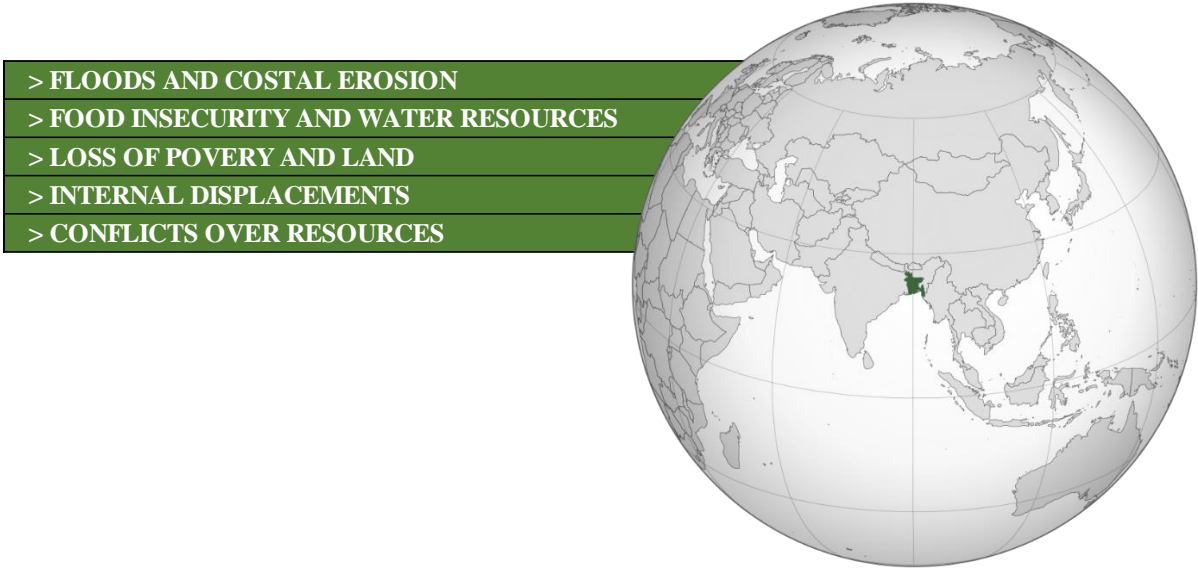
⁴⁰⁶ *Ibidem*.

⁴⁰⁷ *Ibidem*.

⁴⁰⁸ *Ibidem*.

migration can lead to higher costs for private water provision, further straining households already living in poverty⁴⁰⁹. Additionally, inadequate shelter and social safety nets for migrants and internally displaced persons make them more vulnerable to various forms of violence, including labour exploitation and sex trafficking by criminal networks seeking to exploit their vulnerability⁴¹⁰.

Figure 4 – Pressures on Bangladesh



3.4.4 Adaptation policies and final remarks

Bangladesh has been revising its Nationally Determined Contributions (NDCs) in alignment with the guidelines provided by the IPCC⁴¹¹. The updated NDCs encompasses several sectors, including energy, industrial processes and product use, agriculture, forestry, and other land use, and waste⁴¹². The primary objective is to enhance mitigation efforts in Bangladesh, addressing its increasing greenhouse gas (GHG) emissions and contributing to global climate action⁴¹³. These acts are pivotal in transitioning Bangladesh toward a low-carbon, climate-resilient economy and achieving its goal of becoming a middle-income nation⁴¹⁴.

At the national level, the government maintains its dedication to promoting climate change adaptation. The successful evacuation of 2.4 million people within a span of just 5 days following the occurrence of the Cyclone Amphan showcased a remarkable capacity for

⁴⁰⁹ Brennan, M., “Understanding climate-related security risks in Bangladesh”, UNDP, Issue no. 23, 2020.
⁴¹⁰ *Ibidem*.
⁴¹¹ National Adaptation Plan of Bangladesh (2023-2050), Ministry of Environment, Forest and Climate Change, Government of the People’s Republic of Bangladesh, 2022.
⁴¹² *Ibidem*.
⁴¹³ *Ibidem*.
⁴¹⁴ *Ibidem*.

emergency response and disaster risk reduction⁴¹⁵. The “Khurushkul Special Ashrayan Project” has been recognized as one of the largest globally housing initiatives aimed at assisting climate refugees⁴¹⁶. This project is focused on providing a safe place and rehabilitation for these affected populations⁴¹⁷. It has been working tirelessly to relocate vulnerable, landless, and homeless families who are susceptible to harm from such disasters⁴¹⁸.

Unfortunately, in some cases, particularly in post-disaster situations, climate adaptation initiatives have had unintended consequences⁴¹⁹. They might have worsened inequality by reinforcing systems that primarily favour affluent stakeholders, often to the detriment of the most vulnerable individuals⁴²⁰. There is a need for increased investment in climate mitigation, as well as in equitable adaptation measures that are locally led and owned⁴²¹. Additionally, a more integrated approach, which considers climate and conflict risks, is crucial in addressing the complex challenges that climate change poses to human security, peace, and stability across different regions of the country⁴²². This approach should span various sectors, including peace, development, and humanitarian efforts⁴²³.

Even if climate events in Bangladesh present themselves as a risk to all aspects of human security, the greatest repercussions are visible in terms of the population physical security. They are not free from fear, particularly from that of displacement. Then, the international community, together with the Bangladesh government, should jointly support the development and effective implementation of legally binding mechanisms to identify, protect and assist displaced people. Failure to address this imminent challenge could create millions of climate refugees, amplifying the problem not to Bangladesh alone but to a global level, as people will be forced to migrate elsewhere.

Action is required from developed countries that, on the one hand, have to commit to mitigate the consequences at their best, and, on the other, support adaptation of most vulnerable populations by guaranteeing their security and for the well-being of future generations.

⁴¹⁵ National Adaptation Plan of Bangladesh (2023-2050), Ministry of Environment, Forest and Climate Change, Government of the People’s Republic of Bangladesh, 2022.

⁴¹⁶ *Ibidem*.

⁴¹⁷ *Ibidem*.

⁴¹⁸ *Ibidem*.

⁴¹⁹ Brennan, M., “Understanding climate-related security risks in Bangladesh”, UNDP, Issue no. 23, 2020.

⁴²⁰ *Ibidem*.

⁴²¹ *Ibidem*.

⁴²² *Ibidem*.

⁴²³ *Ibidem*.

CONCLUSION

The thesis has provided a comprehensive examination of the complex and pressing issue of the global environmental crisis and its profound implications on human security. The research aimed to answer a two-fold question: firstly, it explored how the environmental crisis affects populations in diverse regions of the world, compromising human security in multiple ways; secondly, it delved into those disparities contributing to the “undemocratic” nature of the crisis, influencing its resolution.

The document began by exploring the interconnection between climate change and security, highlighting the shift from the traditional notions of security to a multi-faceted perspective that incorporates environmental factors. In this sense, it traced the evolution of the environmental risk from minor concern to major global security threat, underscoring the role of human activities in driving climate change. Recent decades have witnessed an alarming escalation of climate-related events irregularly affecting regions and asking for immediate action, particularly on vulnerable economies and populations. Notably, the United Nations and other international organizations have recognized the security implications of climate change, leading to initiatives like the Paris Agreement and the European Green Deal. Then, the results of the opening debate confirmed natural disasters, extreme weather events, loss of biodiversity and the collapse of ecosystems as the greatest threats the world and its people will face in the next decade. It is in this sense that environmental security is developed, embracing a range of environmental risks and challenges that go beyond mere climate change and that include the protection of the overall environment to ensure human well-being and sustainable development.

To effectively address these challenges, the document called for integrated research related to human security and environmental dynamics. Indeed, human security was presented as an alternative lens to examine global environmental issues. While encompassing its dimensions, it was meant demonstrating the connection between specific environmental events and the varying interpretation of the concept of human security from country to country. As a result, it was determined that, even though the environmental crisis exerts its influence on a global level, its impact is far from being equal. The scale of climate vulnerability is amplified by inequalities and exclusion associated with geographical location, gender, income, and other social and economic factors that characterise countries, making the crisis “undemocratic” in terms of its impact.

All these elements were considered when developing the last section of the document. While analysing the three different case studies, it was demonstrated how each country is experiencing diverse climate variations and therefore different repercussions on its environment and its populations. As a consequence, each of these countries is defining different priorities for the development of their climate agenda while focusing on the specific dimension of human security called into question by the crisis. Concretely, for the United States, human security has been interpreted in terms of the economic security of individuals. In the case of Niger, the focus was on communities' food security, while in Bangladesh on people physical security. This way, they develop their mitigation and adaptation actions only at the national level.

Until now, the results have been unsatisfactory. Although the international community has recognised the growing relationship between the environmental crisis and security, the real challenge lies in finding a sustainable solution to the crisis that goes beyond national priorities alone, and that takes a global perspective driven by solidarity. Human security has indeed transcended the individual, local or national sphere, extending to a global scale where climate challenges are not confined to national borders. The environmental crisis has proven to be a risk common to all peoples, involving all nations, whose intensity varies, requiring for an extension of the human security framework.

In understanding the evident economic, social, and power differences, governments that are exclusively focusing on guaranteeing national well-being will never permit the achievement of environmental and human security objectives. Developing countries and those most affected by the crisis do not have the resources to achieve current demands. If left alone, these countries will not be able to protect their populations, inevitably impacting the rest of the world. A disorganized climate transition marked by diverging global and sectoral paths will further isolate nations and split communities.

Ultimately, the urgency and imminence of the crisis should be the primary incentive. As long as nations, especially developed ones, do not recognise the global aspect of the crisis in setting up their adaptation policies, no progress will be made in combating change and people's security will suffer. Environmental problems fall within the category of issues demanding for international collaboration to effectively achieve their resolution. In this sense, the environmental crisis has underscored the necessity for extensive cooperation among governments, international and regional organizations, civil society entities, and community-based stakeholders. Every country should have an interest in exploring new and effective ways of working together to address environmental degradation. The response of the international community to existing climate challenges on populations should avoid fragmentation and,

instead, should result in the formulation of more cohesive, precise, and directed policies. Should the international community's inability to respond to these risks persist, the multilateral system of international governance would be progressively disrupted. The repercussions of the crisis on populations will increase tensions between the countries most responsible for the ongoing processes of change and those most vulnerable to their effects. Actions, both adaptive and mitigating ones, cannot increase one group's security at the price of others or support some freedoms while limiting others.

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